

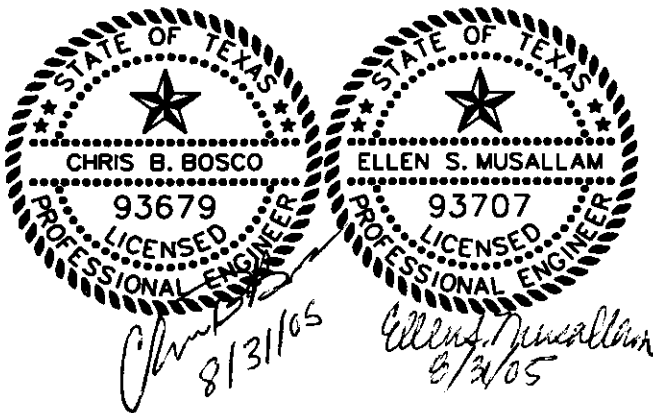
# Impact Fee Capital Improvement Plan – Water, Wastewater, and Roadway

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August 2005

Prepared for  
City of Coppel

CPL05135



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## **1.0 EXECUTIVE SUMMARY**

### **1.1 General Background**

Texas Local Government Code Section 395 requires an impact fee analysis before impact fees are set. Section 395 requires that land use assumptions and capital improvement plans be updated at least every five years. The City of Coppell last performed an impact fee analysis in 1995.

The purpose of this report is to address the methodology used in the development and calculation of water, wastewater, and roadway impact fees for the City of Coppell. The methodology used herein satisfies the requirements of the Texas Local Government Code Section 395 for the establishment of water and wastewater impact fees. The statutory authority for Impact Fees was established by the Texas Legislature in 1987 with the passage of Senate Bill 336 (SB 336) and is currently codified in chapter 395, of the Texas Local Government Code as a means to allow Cities to reduce the impact growth has on its existing customer base and to allow a mechanism to place some of the burden of this growth to future new development. In September 2001, SB 336 was replaced by Senate Bill 243 (SB 243) which contained several changes to the original bill. The changes in this bill include the following:

- Increased the time period that the impact fee and land use assumptions must be updated from 3 to 5 years.
- Service area structure for roadway facilities was based on 6 mile areas.
- City's share of the costs on the federal or Texas highway system, including matching funds, utility line relocations, right-of-way acquisition, curb and gutter, sidewalks and drainage structures can be included
- A credit must be provided for: the portion of the utility service revenues generated by development during the program period that is used for payment of improvements, including the payment of debt, that are included in the capital improvements plan, or a credit equal to 50% of the total projected cost of implementing the capital improvements program.
- Consolidation of the land use assumptions and capital improvements plan public hearings
- Changes in compliance requirements as they relate to annual reporting

Chapter 395 also identifies the items that impact fees can be used to pay for. They are:

- Construction contract price
- Surveying and Engineering fees
- Land acquisition costs

- Fees paid to the consultant preparing or updating the capital improvements plan (CIP)
- Projected interest charges and other finance costs for facilities expansions identified in the CIP

The fee can not be used to pay for:

- Construction, acquisition, or expansion of public facilities or assets other than those identified on the capital improvements plan
- Repair, operation, or maintenance of existing or new capital improvements
- Upgrading, updating, expanding, or replacing existing capital improvements to serve existing development in order to meet stricter safety, efficiency, environmental, or regulatory standards
- Upgrading, updating, expanding, or replacing existing capital improvements to provide better service to existing development
- Administrative and operating costs of the political subdivision
- Principal payments and interest or other finance charges on bonds or other indebtedness, except as allowed above

In February 2005, the City of Coppell, Texas, authorized Freese and Nichols, Inc. (FNI) to perform an impact fee analysis on the City's water and wastewater system. The impact fee analysis follows the general set of procedures in Subchapter B of Chapter 395, Authorization of Impact Fee.

The impact fee analysis involves determining the utilization of existing and proposed projects required as defined by the capital improvement plan to serve new development over the next 10-year time period. Once the utilization of a project by 2005-2015 development is determined, a portion of a project's cost can be assigned as impact fees. For existing or proposed projects, the impact fee is calculated as a percentage of the project cost, based upon the percentage of the project's capacity needed to serve development projected to occur between 2005 and 2015. Capacity serving existing development and development projected for more than 10 years in the future cannot be charged to impact fees.

Chapter 395 of the Texas Local Government Code states that the maximum impact fee may not exceed the amount determined by dividing the cost of capital improvements needed by the total number of service units attributed to new development during the Impact Fee eligibility period less a credit to account for water and wastewater revenues and property taxes used to finance capital improvement plans.

## **1.2 Maximum Allowable Water Impact Fee**

The cost of water capital improvements to serve development projected to occur between 2005 and 2015 is \$ 12,935,639. Finance costs are based on 4.5% interest, assuming

bonds are issued in three equal series in the first, fourth, and seventh years of the 10 year planning period. The increase in the number of service units due to growth over the next ten years is projected as 8,327 service units. The maximum allowable water impact fee with the credit is \$990 per service unit. The maximum allowable water impact fee calculation is summarized as follows:

Proposed Capital Improvement Costs	<u>\$12,935,639</u>
<b>Total Capital Improvement Costs</b>	<b>\$12,935,639</b>
Financing Costs	\$3,545,530
<b>Total Eligible Costs</b>	<b>\$16,481,169</b>
<b>Total 10-year Projected Growth in Service Units</b>	<b>8,327</b>
<b>Base Maximum Calculated Water Impact Fee Per Service Unit Without Credit Analysis</b>	<b>\$1,980</b>
<b>Water Impact Fee Credit (50%)</b>	<b>\$990</b>
<b>Base Maximum Calculated Water Impact Fee Per Service Unit With Credit</b>	<b>\$990</b>

### **1.3 Maximum Allowable Wastewater Impact Fee**

The cost of wastewater system capital improvements to serve development projected to occur between 2005 and 2015 is \$12,195,216. Finance costs are based on 4.5% interest, assuming bonds are issued in three equal series in the first, fourth, and seventh years of the 10 year planning period. The increase in the number of service units due to growth over the next ten years is projected as 8,327 service units. The maximum allowable wastewater impact fee with the credit is \$933 per service unit. The maximum allowable wastewater impact fee calculation is summarized as follows:

Proposed Capital Improvement Costs	<u>\$12,195,216</u>
<b>Total Capital Improvement Costs</b>	<b>\$12,195,216</b>
Financing Costs	\$3,342,709
<b>Total Eligible Costs</b>	<b>\$15,537,925</b>
<b>Total 10-year Projected Growth in Service Units</b>	<b>8,327</b>
<b>Base Maximum Calculated Wastewater Impact Fee Per Service Unit Without Credit</b>	<b>\$1,866</b>
<b>Wastewater Impact Fee Credit (50%)</b>	<b>\$933</b>
<b>Base Maximum Calculated Wastewater Impact Fee Per Service Unit With Credit</b>	<b><u>\$933</u></b>



#### **1.4 Maximum Allowable Roadway Impact Fee**

The total cost of roadway capital improvements to serve the development projected to occur between 2005 and 2015 is \$47,313,269. The increase in the number of service units due to growth over the next ten year period is 80,702 vehicle-miles. The maximum allowable roadway impact fee with the credit is \$168 per service unit.

Proposed Capital Improvement Costs	<u>\$47,313,269</u>
<b>Total Capital Improvement Costs</b>	<b>\$47,313,269</b>
Financing Costs	<u>\$16,091,731</u>
<b>Total Costs</b>	<b>\$63,405,000</b>
<b>Total Eligible Costs</b>	<b>\$27,157,029</b>
<b>Total 10-year Projected Growth in Service Units (veh-mil)</b>	<b>80,702</b>
<b>Base Maximum Calculated Roadway Impact Fee Per Service Unit Without Credit</b>	<b>\$337</b>
<b>Roadway Impact Fee Credit (50%)</b>	<b>\$168</b>
<b>Base Maximum Calculated Roadway Impact Fee Per Service Unit With Credit</b>	<b><u>\$168</u></b>

## **2.0 LAND USE ASSUMPTIONS**

### **2.1 Purpose**

Chapter 395 of the Texas Local Government Code describes the process by which cities in Texas must formulate the development of impact fees. To assist the City of Coppell in determining the need and timing of capital improvements to serve future development, a reasonable estimation of future growth is required. For the purposes of determining an impact fee structure, growth and development projections were formulated based on assumptions pertaining to the type, location, quantity, and time of various future land uses in the community. The purpose of this section of the report is to establish and document the methodology used for preparing the growth and land use assumptions for the City of Coppell. These land use assumptions, which include population projections, will become the basis for the preparation of an impact fee for capital improvement plans for water and wastewater facilities.

### **2.2 Elements of the Land Use Assumptions**

This section contains:

- A. Explanation of the general methodology used to prepare the land use assumptions
- B. Historical Data Analysis
- C. Base Year Data – Information on population and land use for the City of Coppell as of March 2005
- D. Future 10-Year Data - Information on population and land use for the City of Coppell in the year 2015 (buildout)
- E. Land Use Maps – Maps of land use for years 2005 and 2015 of the City of Coppell

### **2.3 Methodology**

The Land Use Assumptions and future growth projections take into account several factors influencing development patterns, including:

- A. The character, type, density, and quantity of existing development
- B. Existing zoning patterns
- C. Current growth trends in the City
- D. Location and configuration of vacant land
- E. Availability of land for residential growth

The data to compile these land use assumptions was obtained from the City of Coppel. The 10-year growth projections were calculated based upon reasonable growth rates using past absorption rates and development proposals known or approved by the City of Coppel. Based on the growth assumptions and capital improvements needed to support growth, it is possible to develop an impact fee structure that fairly allocates improvement costs to growth areas in relationship to their impact on the entire infrastructure system.

## **2.4 Historical Data**

The City of Coppel provided the following data:

- Wastewater production for the years 2000-2004,
- Water usage data for the years 2000-2003.
- Population distribution according to the 2000 Census Tracts, and
- Year 2005 and buildout (year 2015) land use assumptions.

The original year 2005 and buildout (year 2015) land use plans provided by the City of Coppel are included as Figures 2.1 and 2.2. For purposes of this report, the land uses were grouped into residential, commercial, and parks and open spaces for final analysis. Population data for the years 2001 through 2004 was obtained from the North Central Texas Council of Governments (NCTCOG). Since the land use data provided by the City was for the year 2005, the land use areas were considered to develop at approximately the same rate per year as the population. The land use areas were projected back yearly from the 2005 to the year 2000. Standard water usage and wastewater production values for commercial and parks and open spaces were used to determine the historical per capita water usage and wastewater flows. A historical average to maximum day water usage peaking factor and number of residents per residential acre were also established using this data. The historical data for the years 2000 through 2004 are presented in Tables 2.1 and 2.2.

Table 2.1

Historical Population and Water Usage Data											
Year	Population	Average Day Water Use (mgd)	Max Day Water Use (mgd)	Commercial Acres (acres)	Park/Open Space Acres (acres)	Residential Acres (acres)	Average Residential Pop/Acre	Parks/Open Spaces Water Demand (gpd/acre)	Commercial Water Demand (gpd/acre)	Historical Average Residential Water Demand (gpd/person)	Historical Avg Day/Max Day Peaking Factor
2000	36051	8.3	17.0	1683	847	2705	13	250	1250	165	2.05
2001	36867	8.0	17.0	1707	859	2766	13	250	1250	153	2.12
2002	37683	7.6	16.9	1731	871	2827	13	250	1250	139	2.22
2003	38499	8.4	17.8	1755	883	2888	13	250	1250	155	2.11
2004	38650	n/a	n/a	1779	895	2900	13	250	1250		

\* Historical Average Residential Water Demand (gpd/person) = (Average Day Water Usage -(Commercial Acres \* Commercial Water Demand) - (Parks and Open Spaces Acres \* Parks/Open Space Water Demand))/Population

**Table 2.2**

<b>Historical Population and Wastewater Flow Data</b>								
Year	Population	Average Day Wastewater Flow (mgd)	Commercial Acres (acres)	Park/Open Space Acres (acres)	Residential Acres (acres)	Parks/Open Spaces Wastewater Production (gpd/acre)	Commercial Wastewater Production (gpd/acre)	Historical Average Residential Wastewater Production (gpd/person)
2000	36051	3.5	1683	847	2705	50	750	62
2001	36867	3.9	1707	859	2766	50	750	71
2002	37683	3.9	1731	871	2827	50	750	69
2003	38499	3.9	1755	883	2888	50	750	67
2004	38650	4.0	1779	895	2900	50	750	68

\*2000 Acres= 2005 Acres \* 2000 Pop/2004 Pop

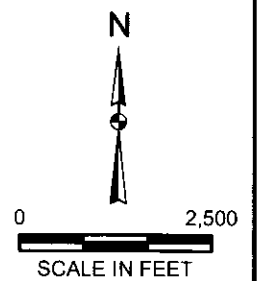
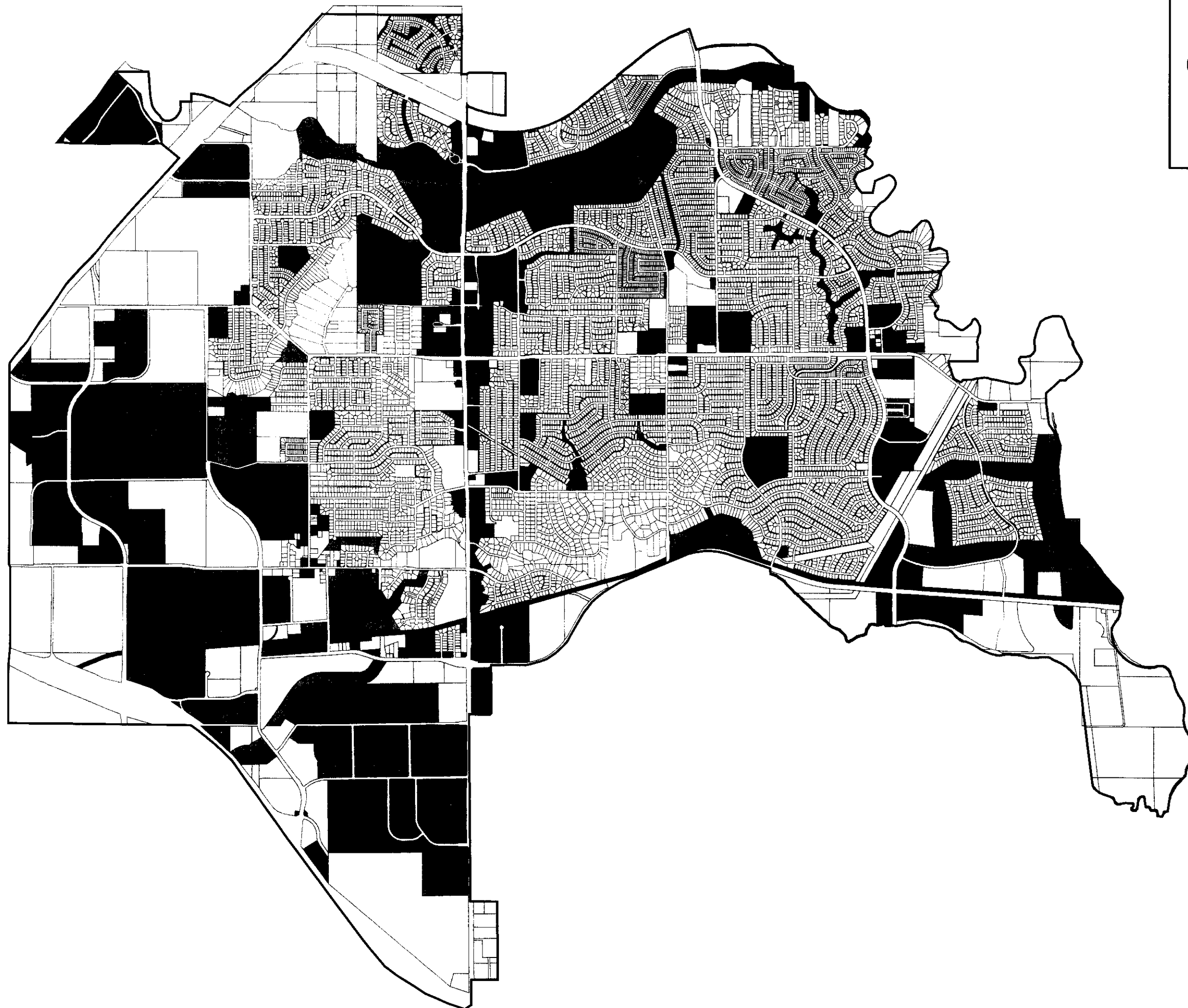
\*2005 Pop = 2005 Res Acres \* 2000 Pop/Acre

\* Historical Average Residential Wastewater Production (gpd/person) = (Average Day Wastewater Production

- (Commercial Acres \* Commercial Wastewater Usage)

- (Parks and Open Spaces Acres \* Parks/Open Space Wastewater Usage ))/Population

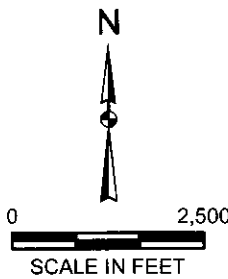
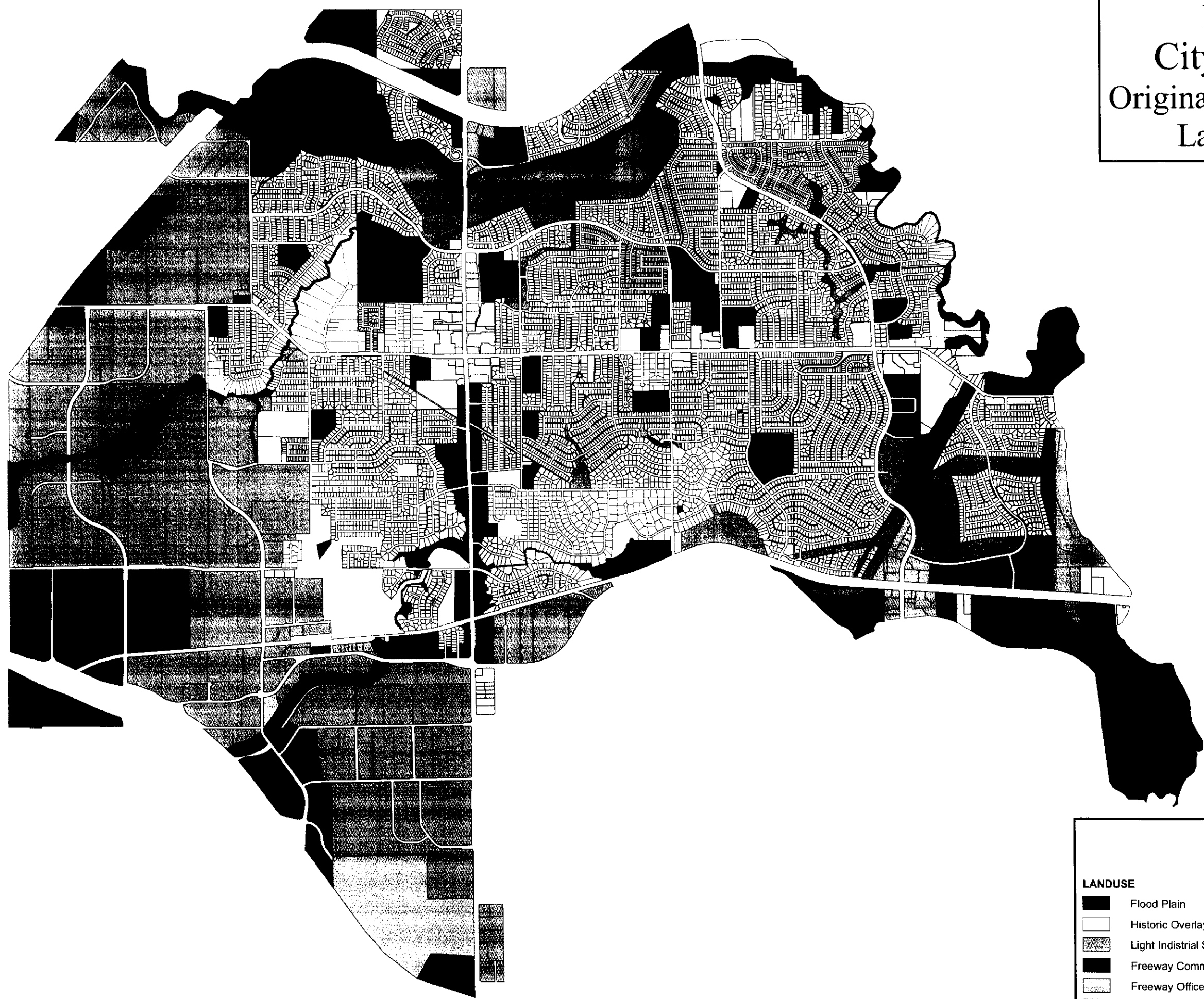
**Figure 2.1**  
**City of Coppell**  
 Original 2005  
 Land Use Plan



**LEGEND**

- City Limits
- LANDUSE**
- Developed Residential
- Undeveloped Residential
- Developed Non-Residential
- Undeveloped Non-Residential
- Institution
- Parks & Open Space
- Railroad
- Various Easements

**Figure 2.2**  
**City of Coppell**  
**Original 2015 (Buildout)**  
**Land Use Plan**



**LEGEND**

LANDUSE	
Flood Plain	Regional Retail
Historic Overlay	Neighborhood Retail
Light Industrial Showroom	Residential High Density
Freeway Commercial	Residential Medium Density
Freeway Office	Residential Low Density
Mixed Use	Public Institutional
	Park Open Space

## **2.5 Base Data (Year 2005)**

In any evaluation and projection of future land use patterns, a documentation of existing conditions is essential. A documentation of existing land use patterns and population was made from staff input and from analysis of historical data. This documentation will serve as a base line for future growth. Table 2.3 indicates a summary of existing land uses and populations for the City of Coppel.

**Table 2.3 2005 Land Use and Population**

Land Use	Acreage	Population
Developed Commercial	1805	
Developed Residential	2900	
Parks and Open Spaces	908	
Undeveloped Commercial	2029	
Undeveloped Residential	123	
Total Developed Acres	5613	38795

## **2.6 Growth Assumptions**

The growth was characterized based on population. A series of assumptions were made to arrive at a reasonable growth rate. The following assumptions have been made as a basis from which ten-year projections could be initiated.

- A. Future land uses will occur as identified by current development patterns and city staff.
- B. The City will be able to finance the necessary improvements to accommodate growth.
- C. School facilities will accommodate increases in population.

## **2.7 10-Year Projections (Year 2015)**

The 10-year projections of land use assumptions are based upon previous and current growth rates and number of people per residential acre.

The projected 10-year population based on 13 people per residential acre, and land use assumptions are shown in Table 2.4.



**Table 2.4      2015 (Buildout) Land Use Assumptions**

Land Use	Acreage	Population
Developed Commercial	3800	
Developed Residential	3086	
Parks and Open Spaces	1255	
Total Developed Acres	8141	40118

## **2.8      Land Use Maps**

The land use maps are provided on the following pages. The existing land use map contains land uses for the following categories:

- Developed Residential
- Undeveloped Residential
- Developed Commercial
- Undeveloped Commercial
- Parks and Open Spaces

The proposed land use maps contain land uses for the following categories:

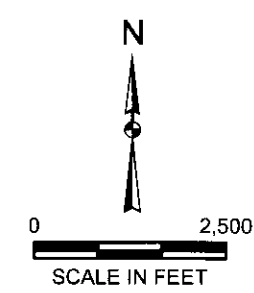
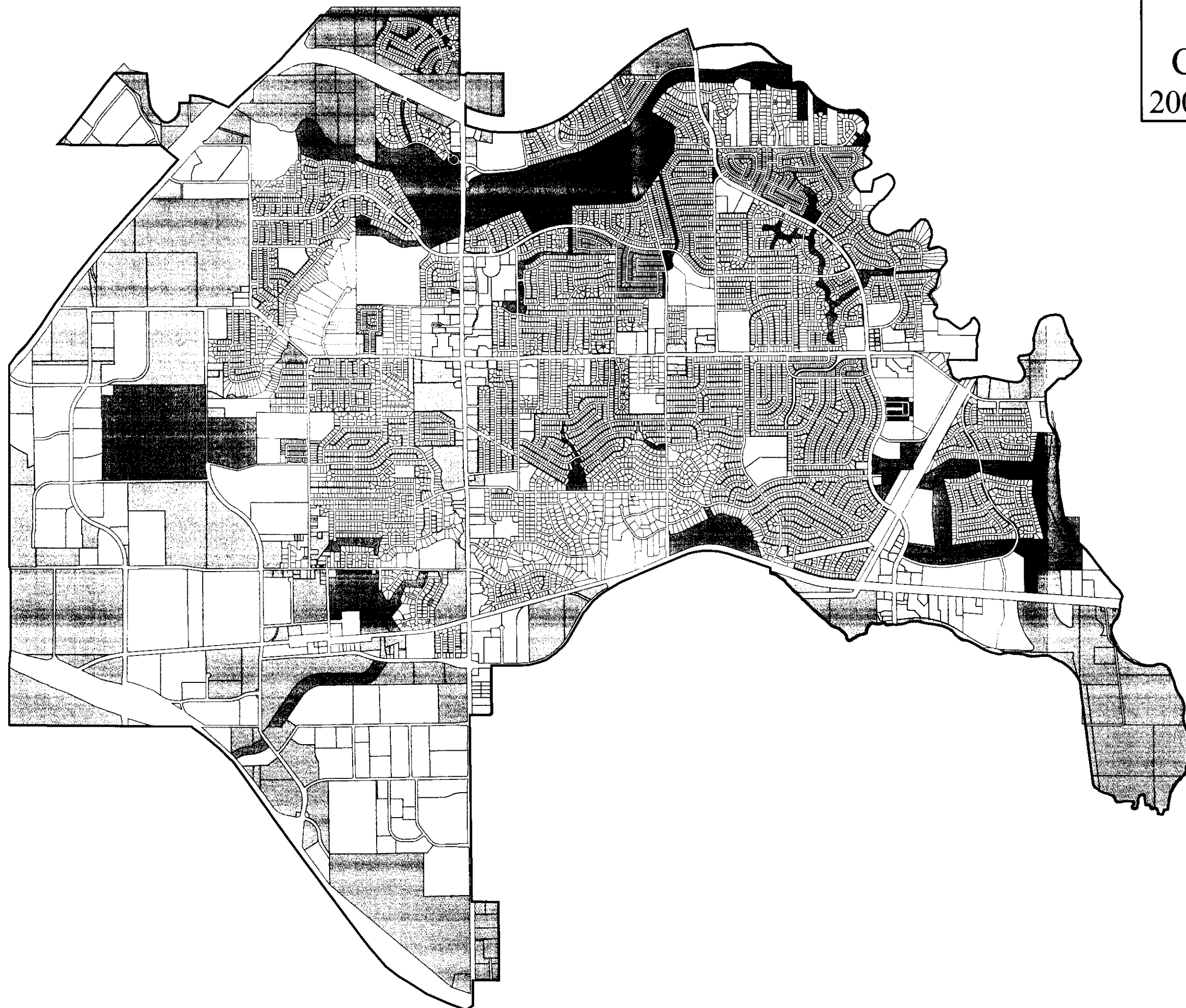
- Developed Residential
- Developed Commercial
- Parks and Open Spaces

Figure 2.3 illustrates land uses for the year 2005. Figure 2.4 illustrates land uses for the year 2015.







## **2.9      Summary**

- Existing estimated population of Coppell in the year 2005 is 38795 persons.
- An average of 13 persons/developed residential acre was used to calculate the City of Coppell's 10-year growth projections.
- The 10-year population projection for the year 2015 in the City of Coppell is 40,118 persons.
- Buildout will occur in the year 2015.

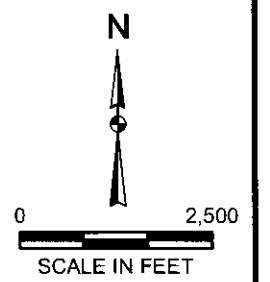
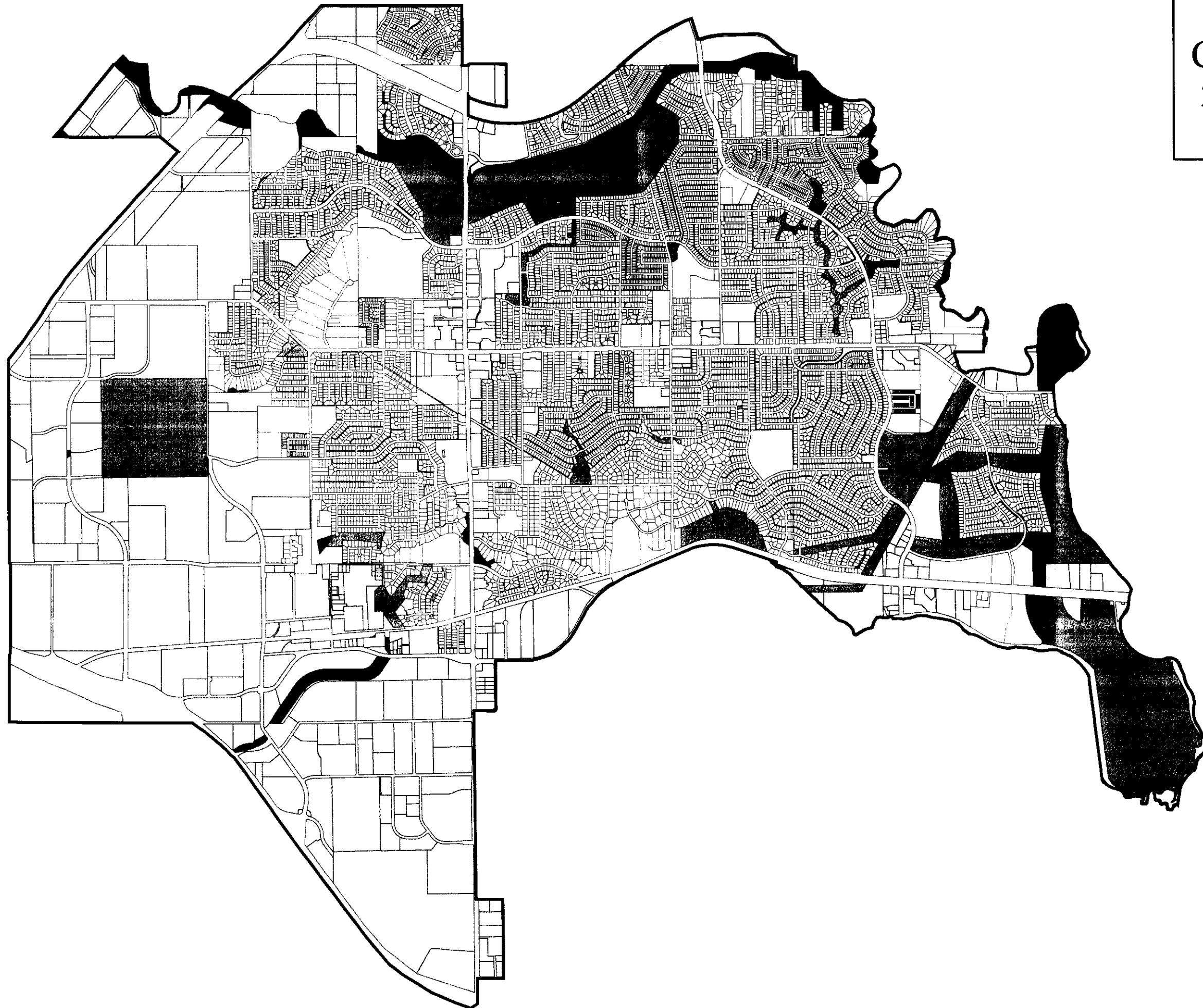
**Figure 2.3**  
**City of Coppell**  
**2005 Land Use Areas**



**LEGEND**

-  City Limits
- LANDUSE**
-  Developed Residential
-  Undeveloped Residential
-  Developed Commercial
-  Undeveloped Commercial
-  Parks & Open Space

**Figure 2.4**  
**City of Coppell**  
**2015 (Buildout)**  
**Land Use Areas**



**LEGEND**

	City Limits
<b>LANDUSE</b>	
	Commercial
	Residential
	Parks & Open Space
	Flood Plane

### **3.0 WATER AND WASTEWATER IMPACT FEE ANALYSIS**

Water and wastewater impact fees are based on the capital costs a city incurs to provide the water distribution system and wastewater system to serve development in the next ten years and the service units added during the same time period. The impact fee analysis for the water distribution and wastewater system is based on the capital improvement plans developed in this report.

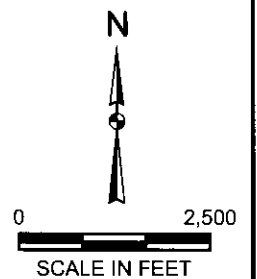
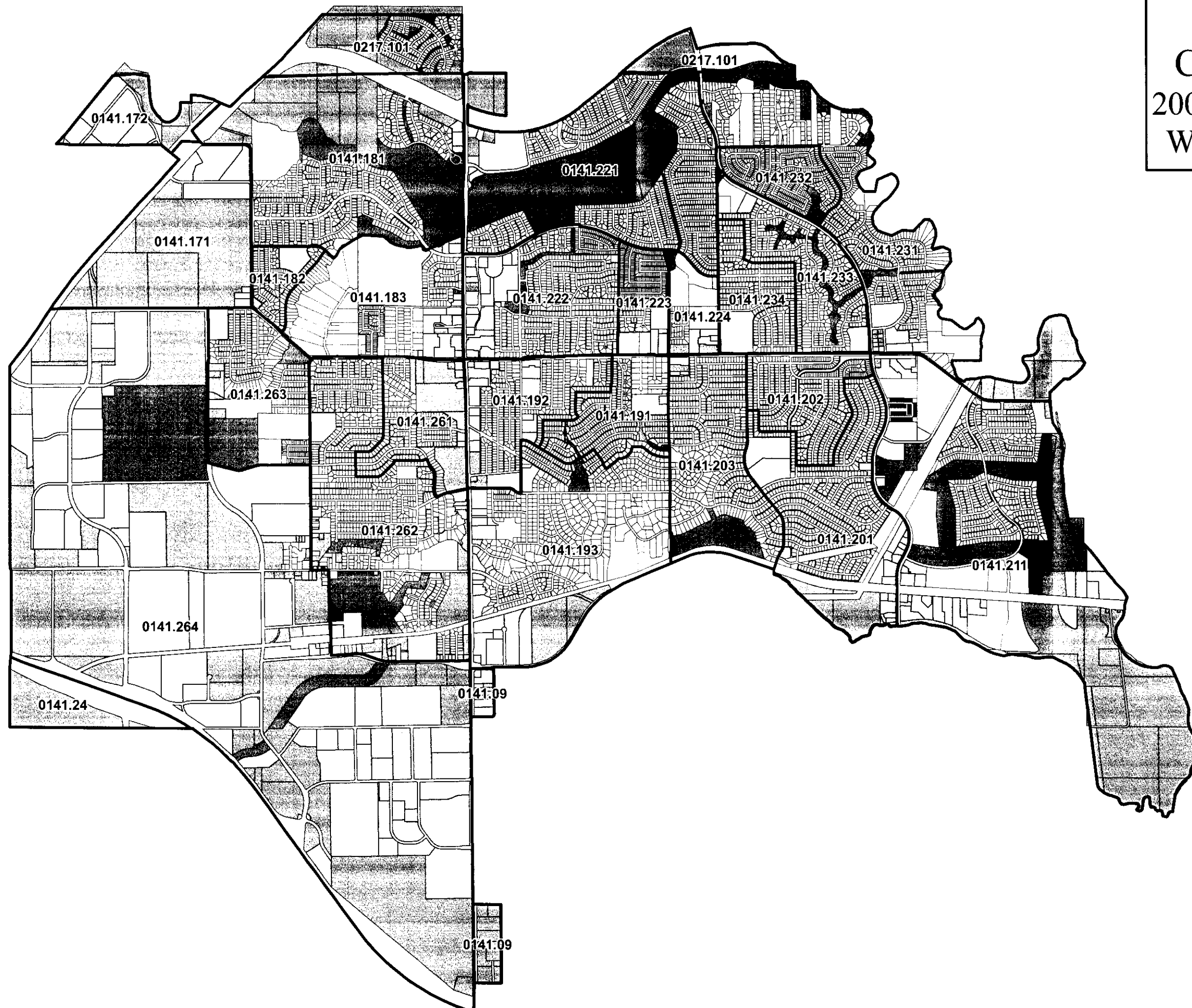
#### **3.1 Populations**

Population and land use projections were prepared using land use data and population data from the City. The City of Coppel total population in 2005 is projected as 38,795, and the population in 2015 is projected as 40,118. The 10-year population growth is projected to be 1,323. The land use assumptions combined with Census Tract Areas are shown in Figures 3.1 and 3.2. These populations were used to establish water demands and wastewater flows, which are used to size proposed water and wastewater system improvements.

#### **3.2 Water Demands**

The population data along with the Capital Improvements Plan developed future water demands based on a projected average day per capita use and peaking factors. The average day and maximum day water demands for 2005 and 2015 were projected using the information developed in this document as summarized in Section 2.04 (Historical Data). These water demands are shown in Table 3.1. Using land use types grouped by Census Tract and the water uses shown in Table 3.1, the average day and maximum day demands for 2005 and 2015 are broken down by Census Tract in Table 3.2.

**Figure 3.1**  
**City of Coppell**  
**2005 Land Use Areas**  
**With Census Tracts**

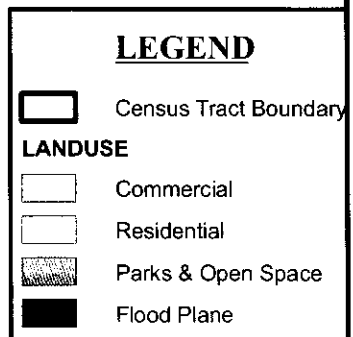
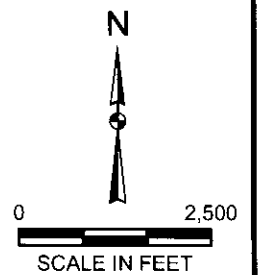
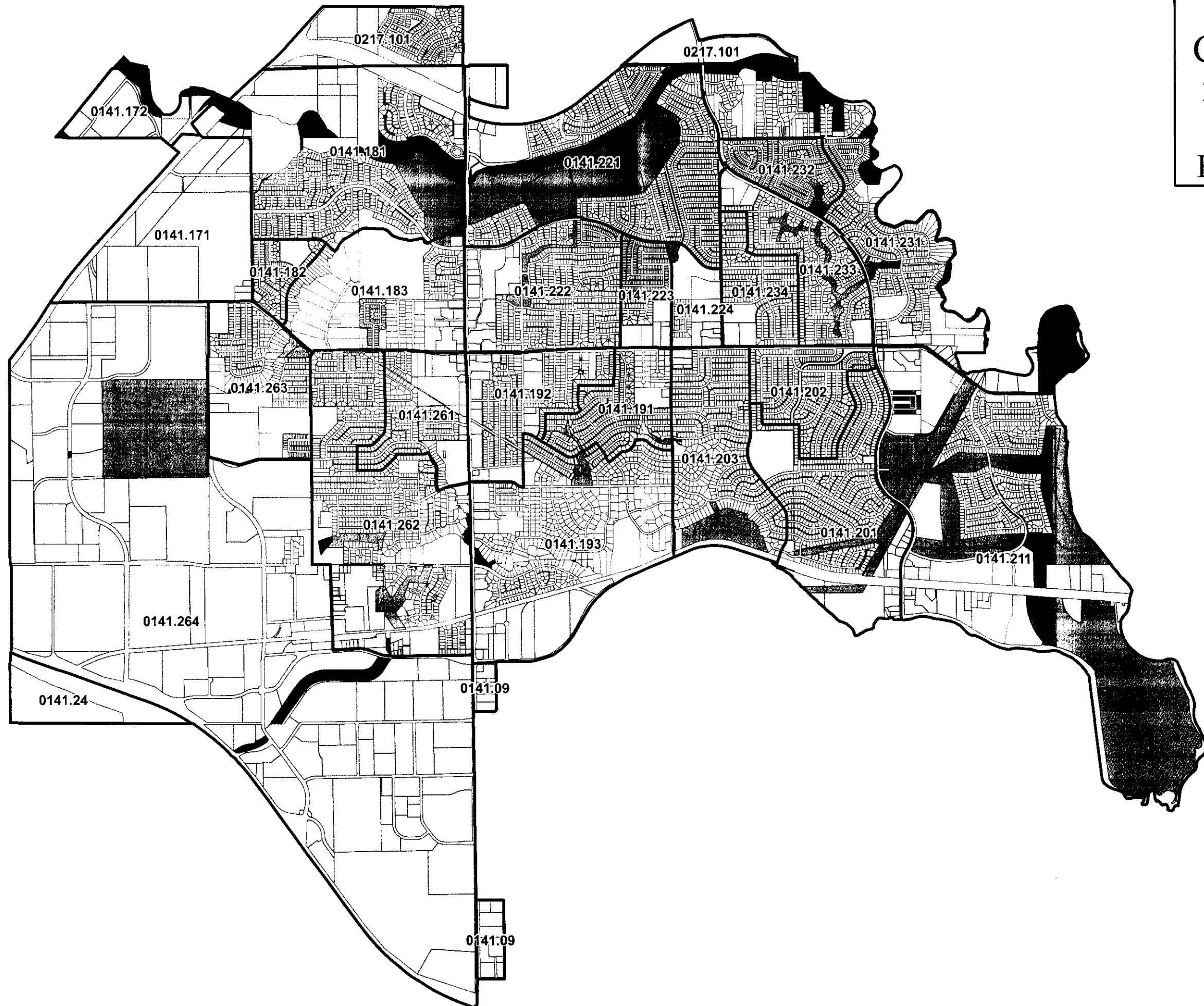


**LEGEND**

- Census Tract Boundary
- LANDUSE**
- Developed Residential
- Undeveloped Residential
- Developed Commercial
- Undeveloped Commercial
- Parks & Open Space



**Figure 3.2**  
**City of Coppel**  
**2015 (Buildout)**  
**Land Use**  
**By Census Tracts**



**Table 3.1**

<b>Projected Water Demands</b>										
Year	Population	Pop/Res Acre	Commercial Acres (acres)	Parks/Open Spaces (acres)	Average Day Commercial Water Usage (gpd/acre)	Average Day Park/Open Space Water Usage (gpd/acre)	Average Residential Usage (gpcd)	Average/ Max Peaking Factor	Average Day Total (mgd)	Max Day Total (mgd)
2005	38795	13	1805	908	1250	250	185	2.25	10	22
2015 (buildout)	40118	13	3800	1255	1250	250	185	2.25	12	28

**Table 3.2      2005 and 2015 Water Demands by Census Tract**

Census Tract No.	2005 Average Water Usage (mgd)	2005 Maximum Day Water Usage (mgd)	2015 Average Water Usage (mgd)	2015 Maximum Day Water Usage (mgd)
0141.09	0.02	0.04	0.08	0.19
0141.171	0.07	0.15	0.39	0.88
0141.172	0.00	0.00	0.09	0.20
0141.181	0.51	1.15	0.74	1.66
0141.182	0.08	0.19	0.08	0.18
0141.183	0.49	1.10	0.48	1.08
0141.191	0.24	0.54	0.23	0.52
0141.192	0.27	0.61	0.29	0.66
0141.193	0.78	1.75	0.83	1.86
0141.201	0.48	1.08	0.49	1.10
0141.202	0.24	0.55	0.24	0.53
0141.203	0.42	0.95	0.42	0.94
0141.211	0.86	1.94	0.95	2.13
0141.221	0.60	1.36	0.67	1.50
0141.222	0.42	0.95	0.41	0.93
0141.223	0.13	0.28	0.14	0.31
0141.224	0.11	0.25	0.11	0.25
0141.231	0.56	1.26	0.67	1.50
0141.232	0.14	0.32	0.14	0.32
0141.233	0.27	0.60	0.28	0.64
0141.234	0.20	0.45	0.20	0.44
0141.24	0.00	0.00	0.07	0.15
0141.261	0.18	0.40	0.26	0.59
0141.262	0.73	1.64	0.87	1.95
0141.263	0.32	0.72	0.37	0.83
0141.264	1.37	3.08	2.70	6.08
0217.101	0.10	0.23	0.29	0.66
<b>Total</b>	<b>10</b>	<b>22</b>	<b>12</b>	<b>28</b>



### **3.3 Wastewater Flows**

The Capital Improvements Plan developed future wastewater flows based on historical data, projected average day per capita wastewater production and peaking factors for dry and wet weather flows. Peaking factors for peak dry weather and peak wet weather flows were taken as 4. The projected wastewater flows for 2005 and 2015 are shown in Table 3.3.

**Table 3.3**

<b>Projected Wastewater Flows</b>								
Year	Population	Commerical Acres (acres)	Parks/Open Spaces (acres)	Commercial Wastewater Production (gpd/acre)	Park/Open Space Wastewater Production (gpd/acre)	Residential Production (gpcd)	Average Day Total (mgd)	Peak Day Total (mgd)
2005	38795	1805	908	750	50	80	4.47	17.88
2015 (buildout)	40118	3800	1255	750	50	80	6.13	24.52

\*Residential Production 2000 = (Tot Hist. Production-(Comm Acres \* gpad)-(Parks/Open Spaces Acres \* gpad))/Pop

\*Peak Day = Average Day \*4

**Table 3.4 2005 and 2015 Wastewater Flows by Census Tract**

Census Tract No.	2005 Average Wastewater Flow (mgd)	2005 Peak Wastewater Flow (mgd)	2015 Average Wastewater Flow (mgd)	2015 Peak Wastewater Flow (mgd)
0141.09	0.01	0.04	0.05	0.20
0141.171	0.04	0.16	0.23	0.94
0141.172	0.00	0.00	0.05	0.21
0141.181	0.21	0.86	0.35	1.42
0141.182	0.04	0.15	0.04	0.15
0141.183	0.23	0.93	0.23	0.91
0141.191	0.11	0.42	0.10	0.41
0141.192	0.13	0.51	0.14	0.54
0141.193	0.35	1.41	0.38	1.52
0141.201	0.22	0.88	0.23	0.92
0141.202	0.11	0.42	0.10	0.41
0141.203	0.18	0.73	0.18	0.72
0141.211	0.38	1.54	0.41	1.62
0141.221	0.26	1.03	0.29	1.14
0141.222	0.19	0.77	0.19	0.76
0141.223	0.06	0.23	0.06	0.25
0141.224	0.05	0.20	0.05	0.21
0141.231	0.24	0.98	0.30	1.20
0141.232	0.06	0.25	0.06	0.24
0141.233	0.12	0.47	0.12	0.50
0141.234	0.09	0.36	0.09	0.35
0141.24	0.00	0.00	0.04	0.16
0141.261	0.08	0.31	0.12	0.49
0141.262	0.32	1.29	0.40	1.59
0141.263	0.14	0.56	0.17	0.69
0141.264	0.80	3.20	1.59	6.37
0217.101	0.04	0.17	0.14	0.57
<b>Total</b>	<b>4.47</b>	<b>17.87</b>	<b>6.13</b>	<b>24.52</b>

### **3.4 Water and Wastewater System Capital Improvements**

Proposed water system projects were developed as part of the Capital Improvement Plan created in this document. A detailed description of the costs for each of the various projects needed for the 10-year growth period used in the impact fee analysis for both the water and wastewater systems are shown in Tables 3.5 and 3.6 respectively. These proposed water system Capital Improvement Projects are shown on Figure 3.3. Proposed wastewater projects are shown on Figure 3.4.

**Table 3.5**

**Existing and Planned Improvements for the Water Distribution System,  
2005-2015 with Estimated Costs**

No.	Description of Project	Estimated Cost
<b>Existing Projects</b>		
1	24-inch Sandy Lake Road and Coppell Road water line from Denton Tap Road to Wagon Wheel EST	\$985,030
2	12-inch water line along Ruby Road from Royal Ln to Coppell Road	\$324,480
3	12-inch water line along western edge of City from Northpoint Drive to Gateview Drive	\$526,320
4	Wagon Wheel 2.0 MG EST	\$2,786,990
5	12-inch SH 121 Water Line from Sandy Lake to Coppell Road	\$212,616
6	Village Parkway Pump #6	\$273,607
7	30 Sandy Lake Road water line from MacArthur Blvd. to Denton Tap Road	\$1,862,720
<b>Proposed Projects</b>		
8	16-inch water line from Bethel Road to Airline Drive along Denton Tap	\$578,500
9	16-inch Water Line Along Parkway Blvd.	\$372,000
10	Star Leaf Pump Station (Future Growth)	\$3,271,200
10a	Star Leaf Pump Station (Reliability/Not Applied Toward Impact Fee)	\$3,228,800
11	12-inch SH 121 Water Line from Coppell Road to Denton Tap	\$1,420,154
12	12-inch water line along Belt Line Road and west Along IH 635 from the existing 12-inch water line south of Lakeshore Drive to the existing 12-inch water line at Freeport Parkway	\$1,435,200
13	Replacement of Existing 12-inch with 20-inch Water Line from Elevated Storage Tank	\$518,400
	<b>TOTAL</b>	<b>\$17,796,017</b>

\*Project Costs for Projects # 1, 5, 6, 7, 8 and 10 provided by the City of Coppell

**Table 3.6**

<b>Existing and Planned Improvements for the Sewer Collection System, 2005-2015 with Estimated Costs</b>		
<b>No.</b>	<b>Description of Project</b>	<b>Estimated Cost</b>
<b>Existing Projects</b>		
1	Existing 30-inch forcemain in Basin C	\$1,164,000
2	Existing 24-inch Gravity Line in Basin A	\$1,476,000
3	Existing 21-inch Gravity Line in Basin A	\$357,600
4	Existing 18-inch Gravity Line in Basin A	\$321,600
5	Existing 15-inch Gravity Line in Basin A	\$428,400
6	Existing 21-inch Gravity Line in Basin B	\$357,600
7	Existing 27-inch Gravity Line in Basin B	\$751,800
8	Existing 15/24-inch Gravity Line in Basin E	\$1,045,800
9	Existing 30-inch Gravity Line in Basin C and E	\$2,263,200
<b>Proposed Projects</b>		
10	Saint Jones 30-inch forcemain (discharge from Deforest PS)	\$3,040,012
11	New 20-inch forcemain from Sandy Lake Lift Station	\$1,168,409
12a and b	Upsize Deforest and Sandy Lake Lift Stations	\$2,587,755
13	Upsize 8" to 12" in Northwest Section of Basin A	\$1,123,200
14	Add 12-inch Sewer Line in South of Basin E	\$187,200
	<b>TOTAL</b>	<b>\$16,272,576</b>

\*Costs for Projects # 10,11,12a and b provided by City of Coppell

Table 3.7

Existing and Planned Improvements for the Water Distribution System, 2005-2015							
No.	Description of Project	Percent Utilization			Estimated Cost	Costs Based on 2005 Prices	
		2005	2015	2005-2015		Current Development	10-Year (Buildout) (2005-2015)
Existing Projects							
1	24-inch Sandy Lake Road and Coppell Road water line from Denton Tap Road to Wagon Wheel EST	20%	100%	80%	\$985,030	\$197,006	\$788,024
2	12-inch water line along Ruby Road from Royal Ln to Coppell Road	70%	100%	30%	\$324,480	\$227,136	\$97,344
3	12-inch water line along western edge of City from Northpoint Drive to Gateview Drive	60%	100%	40%	\$526,320	\$315,792	\$210,528
4	Wagon Wheel 2.0 MG EST	7%	100%	93%	\$2,786,990	\$183,202	\$2,603,788
5	12-inch SH 121 Water Line from Sandy Lake to Coppell Road	89%	100%	11%	\$212,616	\$189,493	\$23,123
6	Village Parkway Pump #6	0%	100%	100%	\$273,607	\$0	\$273,607
7	30 Sandy Lake Road water line from MacArthur Blvd. to Denton Tap Road	28%	100%	72%	\$1,862,720	\$518,949	\$1,343,771
Proposed Projects							
8	16-inch water line from Bethel Road to Airline Drive along Denton Tap	0%	100%	100%	\$578,500	\$0	\$578,500
9	16-inch Water Line Along Parkway Blvd.	0%	100%	100%	\$372,000	\$0	\$372,000
10	Star Leaf Pump Station (Future Growth)	0%	100%	100%	\$3,271,200	\$0	\$3,271,200
11	12-inch SH 121 Water Line from Coppell Road to Denton Tap	0%	100%	100%	\$1,420,154	\$0	\$1,420,154
12	12-inch water line along Belt Line Road and west Along IH 635 from the existing 12-inch water line south of Lakeshore Drive to the existing 12-inch water line at Freeport Parkway	0%	100%	100%	\$1,435,200	\$0	\$1,435,200
13	Replacement of Existing 12-inch with 20-inch Water Line from Elevated Storage Tank	0%	100%	100%	\$518,400	\$0	\$518,400
	TOTAL				\$15,058,257	\$2,001,652	\$12,935,639

\*Project Costs for Projects # 1, 5, 6, 7, and 8 provided by the City of Coppell

Table 3.8

## Existing and Planned Improvements for the Sewer Collection System, 2005-2015

Existing and Planned Improvements for the Sewer Collection System, 2005-2015							
No.	Description of Project	Percent Utilization			Estimated Cost	Costs Based on 2005 Prices	
		2005	2015	2005-2015		Current Development	10-Year (Buildout) (2005-2015)
Existing Projects							
1	Existing 30-inch forcemain in Basin C	60%	100%	40%	\$1,164,000	\$698,400	\$465,600
2	Existing 24-inch Gravity Line in Basin A	70%	100%	30%	\$1,476,000	\$1,033,200	\$442,800
3	Existing 21-inch Gravity Line in Basin A	70%	100%	30%	\$357,600	\$250,320	\$107,280
4	Existing 18-inch Gravity Line in Basin A	70%	100%	30%	\$321,600	\$225,120	\$96,480
5	Existing 15-inch Gravity Line in Basin A	70%	100%	30%	\$428,400	\$299,880	\$128,520
6	Existing 21-inch Gravity Line in Basin B	40%	100%	60%	\$357,600	\$143,040	\$214,560
7	Existing 27-inch Gravity Line in Basin B	30%	100%	70%	\$751,800	\$225,540	\$526,260
8	Existing 15/24-inch Gravity Line in Basin E	50%	100%	50%	\$1,045,800	\$522,900	\$522,900
9	Existing 30-inch Gravity Line in Basin C and E	30%	100%	70%	\$2,263,200	\$678,960	\$1,584,240
Proposed Projects							
10	Saint Jones 30-inch forcemain (discharge from Deforest PS)	0%	100%	100%	\$3,040,012	\$0	\$3,040,012
11	New 20-inch forcemain from Sandy Lake Lift Station	0%	100%	100%	\$1,168,409	\$0	\$1,168,409
12a and b	Upsize Deforest and Sandy Lake Lift Stations	0%	100%	100%	\$2,587,755	\$0	\$2,587,755
13	Upsize 8" to 12" in Northwest Section of Basin A	0%	100%	100%	\$1,123,200	\$0	\$1,123,200
14	Add 12-inch Sewer Line in South of Basin E	0%	100%	100%	\$187,200	\$0	\$187,200
	TOTAL				\$16,272,576	\$4,077,360	\$12,195,216

\*Costs for Projects # 10,11,12a and b provided by City of Coppel



The proposed water system projects that have excess capacity to serve future development and are used in the impact fee analysis are listed in Table 3.5. The proposed wastewater system projects that have excess capacity to serve future development and are used in the impact fee analysis are listed in Table 3.6. In Tables 3.7 and 3.8, the percent utilization for 2005, 2015, and the 10-year period, 2005 to 2015 are listed. The 2005 percent utilization is the portion of a project's capacity needed to serve existing development. It is not included as part of the impact fee analysis. The 2015 percent utilization is the portion of the project's capacity that will be needed to serve Coppell in 2015. The 2005-2015 percent utilization is the portion of the project's capacity needed to serve development from 2005 to 2015.

The portion of a project's total cost that is used to serve development projected to occur from 2005 through 2015 is calculated as the total actual cost multiplied by the 2005 to 2015 percent utilization. Only this portion of the cost is used in the impact fee analysis.

### **3.5 Service Units**

The maximum impact fee may not exceed the amount determined by dividing the cost of capital improvements needed by the total number of service units attributed to new development during the impact fee eligibility period. For the purposes of the water impact fee analysis, a water service unit is defined as service equivalent to a water connection for a single-family residence. The City of Coppell does not directly meter wastewater flows and bills for wastewater services based on the customer's water consumption. The wastewater service unit is defined in terms of the size of the water meter used. For the purposes of the impact fee analysis, a wastewater service unit is defined as the wastewater service provided to a customer with a water connection for a single-family residence.

The service associated with public, commercial, and industrial connections is converted into service units based upon the capacity of the meter used to provide service. The number of service units needed to represent each meter size is based on the maximum rated capacity of the meters as shown in AWWA Manual 6, Water Meters -- Selection, Installation, Testing, and Maintenance, 3rd edition, 1986. The service unit equivalent for each meter size is listed in Table 3.9.

**Table 3.9      Service Unit Equivalency Table**

Meter Size	Service Unit Equivalents
5/8"	1
1"	1.67
1 1/2"	3.33
2"	5.33
3"	11.67
4"	21
6"	46.67
8"	80

Table 3.10 shows the water service units for 2005 and the projected service units for 2015. Typically, in Coppell, single-family residences are served with 5/8-inch water meters. Larger meters represent public, commercial, and industrial water use. The 2005 water residential and commercial meter quantities were provided by Coppell. The total number of service unit equivalents for 2005 is 26,027. The 2015 projected water meter quantities are based on population and commercial acre growth projections. The projected total number of service unit equivalents for 2015 is 34,354. The growth in service unit equivalents from 2005 to 2015 is 8,327.

**Table 3.10**

<b>Projected Water Service Units for 2005-2015</b>						
<b>Meter Size</b>	<b>2005 Existing Water</b>	<b>Water Service Unit</b>	<b>2005 Existing Service</b>	<b>2015 Projected Water Meters</b>	<b>2015 Projected Service Units</b>	<b>2005-2015 Projected Growth in</b>
5/8 "	10851	1	10851	11209	11209	358
1"	109	1.67	182.03	166	278	96
1 1/2"	95	3.33	316.35	145	482	166
2"	420	5.33	2238.6	641	3414	1176
3"	34	11.67	396.78	52	605	208
4"	22	21	462	34	705	243
6"	3	46.67	140.01	5	214	74
8"	143	80	11440	218	17447	6007
<b>TOTAL</b>	<b>11677</b>	<b>171</b>	<b>26027</b>	<b>12468</b>	<b>34354</b>	<b>8327</b>

\* Residential (5/8") Projected Water Meters based on projected population percent growth from 2005-2015

\* Commercial (1"-8") Projected Water Meters based on projected commercial acre growth from 2005-2015

Table 3.11 shows the wastewater service units for 2005 and the projected service units for 2015. A wastewater service unit for a single family residence is represented by a 5/8" water meter. Larger meters represent public, commercial, and industrial wastewater use. The 2015 projected connections are based on population and commercial acre growth.

**Table 3.11**

<b>Projected Wastewater Service Units for 2005-2015</b>						
<b>Meter Size</b>	<b>2005 Existing Wastewater</b>	<b>Wastewater Service Unit Equivalents</b>	<b>2005 Existing Service Units</b>	<b>2015 Projected Wastewater Meters</b>	<b>2015 Projected Service Units</b>	<b>2005-2015 Projected Growth in Service Units</b>
5/8 "	10851	1	10851	11209	11209	358
1 "	109	1.67	182.03	166	278	96
1 1/2"	95	3.33	316.35	145	482	166
2"	420	5.33	2238.6	641	3414	1176
3"	34	11.67	396.78	52	605	208
4"	22	21	462	34	705	243
6"	3	46.67	140.01	5	214	74
8"	143	80	11440	218	17447	6007
<b>TOTAL</b>	<b>11677</b>	<b>171</b>	<b>26027</b>	<b>12468</b>	<b>34354</b>	<b>8327</b>

\* Residential (5/8") Projected Wastewater Meters based on projected population percent growth from 2005-2015

\* Commercial (1"-8") Projected Wastewater Meters based on projected commercial acre growth from 2005-2015

### 3.6 Maximum Impact Fee Calculation

The maximum impact fee that can be levied is equal to the projected capital cost needed to serve 10-year development divided by the projected 10-year growth in service units.

The total projected costs include the projected capital improvement costs to serve 10-year development, the projected finance cost for the capital improvements, and the consultant cost for preparing and updating the Capital Improvement Plan.

#### A. Maximum Water Impact Fee

**The eligible costs for water include the following:**

Proposed Capital Improvement Costs	<u>\$12,935,639</u>
<b>Total Capital Improvement Costs</b>	<b>\$12,935,639</b>
Financing Costs	\$3,545,530
<b>Total Eligible Costs</b>	<b>\$16,481,169</b>
<b>Total Water Impact Fee Credit (50%)</b>	<b>\$990</b>

The total eligible costs associated with the existing and proposed water system improvements to meet projected growth over the next ten years is \$16,481,169. The increase in the number of service units due to growth over the next ten years is projected as 8,327 service units.

$$\begin{aligned}\text{Maximum Water Impact Fee} &= \frac{\text{10-year Capital Improvement Cost} - \text{Credit}}{\text{10-year growth in Service Units}} \\ \text{With Credit} &= \frac{\$16,481,169 - \$8,240,585}{8,327 \text{ SU}} \\ &= \$ 990/ \text{SU}\end{aligned}$$

#### B. Maximum Wastewater Impact Fee

**The eligible costs for water include the following:**

Proposed Capital Improvement Costs	<u>\$12,195,216</u>
<b>Total Capital Improvement Costs</b>	<b>\$12,195,216</b>
Financing Costs	\$3,342,709
<b>Total Eligible Costs</b>	<b>\$15,537,924</b>

**Total Wastewater Impact Fee Credit (50%)    \$933**

The total eligible costs associated with the existing and proposed wastewater system improvements to meet projected growth over the next ten years is \$15,537,924. The increase in the number of service units due to growth over the next ten years is projected as 8,327 service units.

$$\begin{aligned}\text{Maximum Wastewater Impact Fee With Credit} &= \frac{\text{10-year Capital Improvement Cost} - \text{Credit}}{\text{10-year Growth in Service Units}} \\ &= \frac{\$15,537,924 - \$7,768,962}{8,327 \text{ SU}} \\ &= \$ 933/ \text{SU}\end{aligned}$$

## **4.0 ROADWAY IMPACT FEE ANALYSIS**

### **4.1 Methodology**

In order to establish or update an impact fee for roadway systems, several steps must be taken. The steps taken for the update of the roadway impact fee for the City of Coppell included:

- Establishment and combining the existing Service Areas into one Service Area.
- Land use assumptions
- Identification of the PM peak hour of vehicle-miles of travel as the appropriate service unit for the impact fee calculation.
- Preparation of an existing street inventory of the thoroughfare plan streets. This inventory included current roadway lengths, roadway widths, number of lanes, pavement types and existing traffic counts.
- Calculation of total vehicle-miles of existing supply for PM peak hour. This was done using the roadway segment length and capacity of the roadway based upon a level-of-service "C/D".
- Evaluation of the existing roadway network based on City traffic count data and traffic counts collected by Gram Traffic Counting. These PM peak hour traffic counts were used to determine current roadway demand, and if any deficiencies (below an acceptable level-of-service) exist on each roadway link within the impact fee service area.
- Calculation of new total vehicle-miles of demand for each service area. These new vehicle-miles of demand are based on the land use assumptions, ITE Trip Generation Manual 7<sup>th</sup> Edition, the North Central Texas Council of Governments (NCTCOG) Workplace Survey, and the National Household Travel Survey.
- Establishment of an impact fee capital improvements plan that includes identification of roadways, lengths, and costs. This capital improvements plan was based on future growth, traffic patterns, and staff input.
- Calculation of new vehicle-miles of supply, vehicle-miles of demand, and excess capacities. These were calculated based on the improvements listed in the capital improvements plan and the existing PM peak hour traffic counts.
- Calculation of the cost of net capacity supplied and the cost to meet existing demands on impact fee CIP roadways.
- Determination of the percentage and cost of capacity added attributed to new growth.
- Calculation of the maximum cost per service unit for each service area.
- Establishment of a land-use vehicle-mile equivalency table for five main land uses with specific categories. These land uses included: residential, office, retail/commercial, light industrial, and institutional.



- Calculation of the impact fee. The land use vehicle-mile equivalency table and the cost per service unit are the components which make up the impact fee.

## **4.2 Roadway Impact Fee Service Areas**

Service areas are required by State Law to define the area served by the Roadway Capital Improvements. A new development in a particular service area can only be assessed an impact fee based on the cost of the capital improvements necessitated by the new development within that service area. The service area for roadway facilities is limited to an area within the corporate boundaries of the city and shall not exceed a distance of six miles. Previously the service area was limited a distance of 3 miles. Based on the new criteria passed in 2001, the existing service area structure of 10 service areas was combined into one service area. This combination of service areas provides the City of Coppell with ability to pool additional funds to construct infrastructure improvements and promotes fee uniformity because it tends to average cost out over several projects. Refer to Figure 4.1 for the service area map.

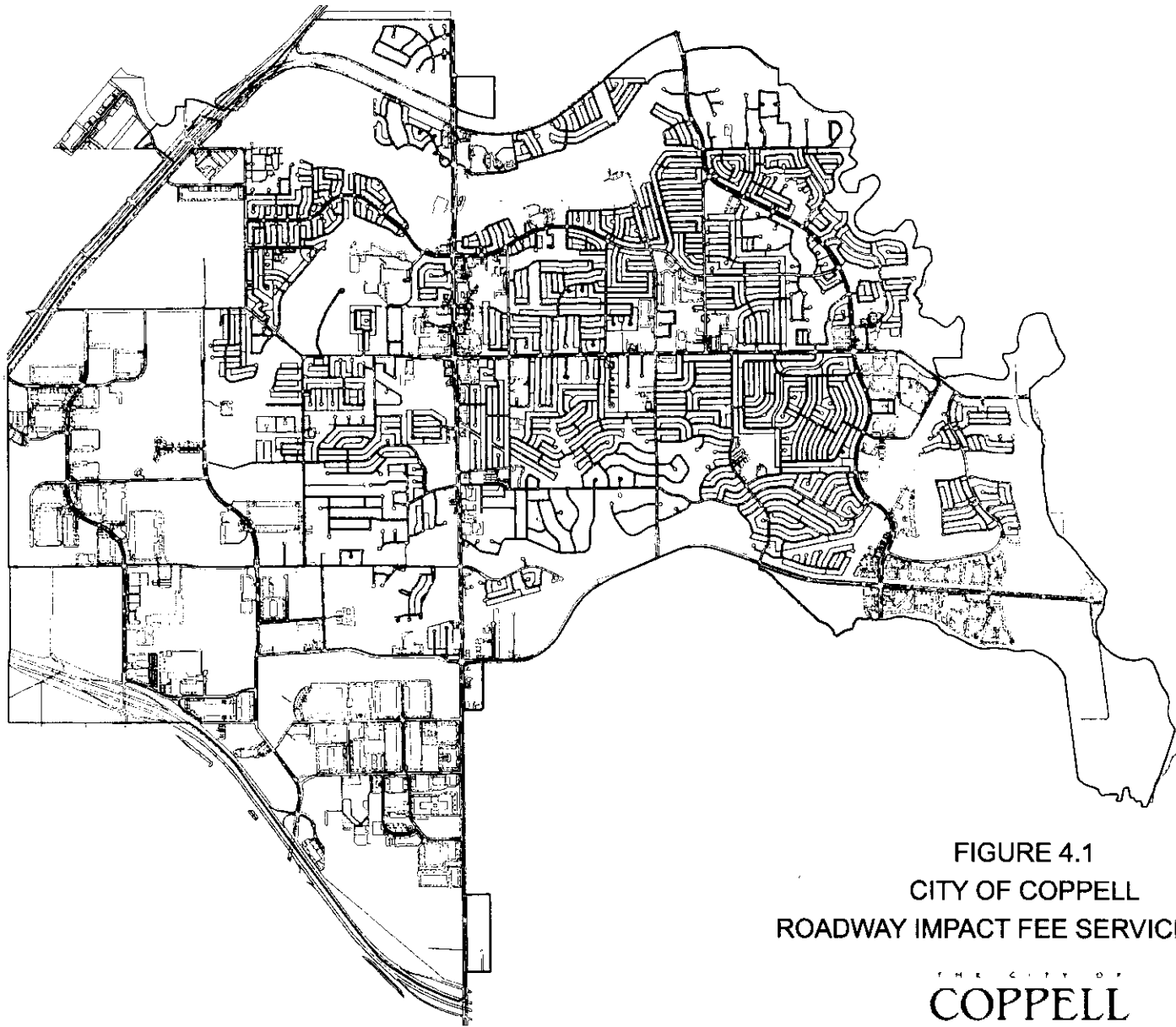
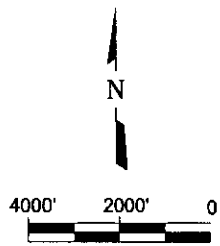


FIGURE 4.1  
CITY OF COPPELL  
ROADWAY IMPACT FEE SERVICE AREA

THE CITY OF  
COPPELL

#### **4.3 Roadway Impact Fees Land Use Assumptions**

Chapter 395 requires that land use assumptions and capital improvements plan be updated at least every five (5) years. The capital improvements plan and land use assumptions are developed for a period of time not more than ten (10) years.

The land use assumptions provide the basis and structure for determining impact fees attributed to future growth and development. These land use assumptions are presented in a report in Section 2.0. From this section the 2005 and 2015 increase in developed acreages for the City of Coppell is estimated to be 5,613 acres and 8,141 acres, respectively.

A summary of the increase in developed acreages used in this report is shown in Table 4.1.

**Table 4.1 Increase in Developed Acreages for years 2005 to 2015**

Land Use	INCREASE IN DEV. ACREAGES
	Acres
<b>Commercial</b>	
Commercial/Office/Retail	230
Freeway Commercial/Office/Retail	664
Light Industrial	866
Public Institutional	235
<b>Residential</b>	
Residential High Density	20
Residential Medium Density	159
Residential Low Density	7
<b>Parks and Open Space</b>	347
<b>Total</b>	<b>2,528</b>

#### 4.4 Establishment of a Roadway Capital Improvement Plan

Chapter 395 of the Texas Local Government Code specifies the requirements necessary to prepare a capital improvements plan. These requirements include:

- A. A description of the existing capital improvements within the service area and the cost to upgrade, update, improve, expand or replace the improvements to meet existing needs and usage
- B. An analysis of the total capacity, the level of current usage, and commitments for usage of capacity of the existing capital improvements
- C. A description of all or the parts of the capital improvements and their costs necessitated by and attributable to new development in the service area based on approved land use assumptions
- D. A definitive table establishing the specific level or quantity of use, consumption, generation, or discharge of service unit for each category of capital improvements and an equivalency table establishing the ratio of the service unit to various types of land uses, including residential, office, retail/commercial, light industrial, and institutional.

- E. The total number of projected service units necessitated by and attributable to new development within the service area based on the approved land use assumptions
- F. The projected demand for capital improvements required by the new service units projected over a reasonable period of time
- G. A plan for awarding a credit for the portion of the ad valorem tax generated by new service units during the program period that is used for the payment of improvements or a credit equal to 50 percent of the total projected cost of implementing the capital improvements plan

The plan must contain two distinct components: analysis of existing conditions and analysis of projected conditions. To analyze these components two measures of performance must be established, they are: level-of-service and service units.

#### **4.5 Roadway Level-of-Service**

Level-of-Service (LOS) is a term used in traffic engineering to describe the performance of the roadway system. Roadway level-of-service is the basic design criterion used in thoroughfare planning. The design level-of-service determines the capacity for which the roadway is intended. Level-of-service is rated from "A" to "F". The higher level of service (A-B) provides better driving conditions, but typically requires higher construction cost. Level of Service "E" is considered to be the capacity limit of urban roadways. Level of Service "C/D" is the design level-of-service selected for the Impact Fee Analysis for the City of Coppell. Table 4.2 lists the maximum service volumes for level-of-service "C/D" as a function of facility type.

**Table 4.2 Roadway Facility Vehicle-Mile Capacities**

Roadway Facility	Roadway Type	Capacity "LOS C/D" Vehicles per hour per lane-mile of Roadway Facility*
Principal Arterial – Divided	P6D	700
Divided Local Arterials	C4D	625
Undivided Collector – 4 Lane	C4U	440
Undivided Collector – 2 Lane	C2U	350

\*Hourly capacity for LOS "C/D" obtained from NCTCOG DFW Regional Travel Model and the Highway Capacity Manual

#### 4.6 Roadway Impact Fee Service Units

An accurate service unit is required to calculate and assess impact fees for new developments. As defined in Chapter 395, "Service unit means a standardized measure of consumption, use, generation, or discharge attributed to an individual unit of development calculated in accordance with generally accepted engineering or planning standards based on historical data and trends applicable to the political subdivision in which the individual unit of development is located during the previous 10 years." In other words it is a measure of supply and demand.

The service unit must accurately reflect the supply, which is provided by the roadway system. Transportation facilities are designed to accommodate peak hour traffic volumes because the heaviest demand for the roadway capacity occurs during the peak hour. These peak hours typically occur during the morning (AM peak) and evening (PM peak) rush hours as motorist travel to and from work. The impact fee analysis for the City of Coppell was developed for PM peak traffic volumes. For the supply side the unit of measurement is the service volume that is provided by a lane-mile (lane-miles) of roadway facility. This number is also the capacity of the roadway based on an acceptable level-of-service; in this case that level-of-service is "C/D".

The service unit must also reflect the demand that a particular development will place on the transportation system. The impact the development has on the street system is directly related to: the trips generated by development, land-use for which the development is intended, and the average length of each trip on the transportation system. For the demand side this unit is a vehicle-trip of one-mile in length (vehicle-miles). Service units create a link between supply (roadway projects) and demand (new development). Both supply and demand can be expressed as a combination of the number of vehicles traveling during the peak hour and the distance traveled by these vehicles in miles. Thus, the Service Unit for roadway impact fees is vehicle-mile.

#### **4.7 Roadway Existing Conditions Analysis**

Through field investigations of existing thoroughfare plan roadways (collector and arterial streets) a roadway inventory was established. This inventory included the pavement type, number of lanes, roadway widths and lengths, the current traffic volume using the roadways, and current designation on the thoroughfare plan. A listing of the roadway inventory is provided in Appendix A. The roadway inventory was used to determine the capacity provided by the existing roadway system, the current vehicle demand on the roadway system, and if any roadway link was over capacity or exhibited any deficiencies.

##### **A. Existing Traffic Volumes**

Existing daily and hourly traffic volumes were obtained from 19 locations throughout the City to supplement existing city traffic count data. These counts were conducted by GRAM Traffic Counting in March 2005. These traffic counts included collector and arterial roadways and were not limited to only potential impact fee capital improvement plan roadways.

##### **B. Vehicle-Miles of Existing Capacity (Supply)**

The vehicle-miles of existing capacity for each counted roadway segment were obtained using the equation below:

Vehicle-Miles of Capacity = Capacity per peak hour per lane x Number of lanes x Length (miles)

For example: a 4-lane divided roadway that is 3 miles in length and has a capacity of 625 vehicles per hour per lane:

Vehicle-Miles of Capacity = 625 vehicles per hour x 4 lanes x 3 miles = 7,500 vehicle-miles per hour

This existing capacity is calculated for each service area and is not limited to only those roadways identified in the impact fee capital improvements program. A summary of existing capacity for the service area is illustrated in Table 4.3. A complete detailed listing by roadway segment is provided in Appendix B.

##### **C. Vehicle-Miles of Existing Demand**

The vehicle-miles of existing demand or the current usage of the facilities for each roadway segment was obtained using the equation below:

Vehicle-Miles of Demand = PM peak hour volume x Length of Roadway (miles)

For example: a 3-mile long roadway that has a PM peak hour traffic volume of 400 vehicles per hour:

Vehicle-Miles of Demand = 400 vehicles per hour x 3 miles = 1,200 vehicle-miles per hour

This existing demand is calculated for each service area and is not limited to only those roadways identified in the impact fee capital improvements program. A summary of the existing demand for the service area is illustrated in Table 4.3. A complete detailed listing by roadway segment is provided in Appendix B.

**Table 4.3      Excess Capacity and Deficiencies**

Service Area	Excess Capacity (Veh-Miles per Hour)	Demand (Veh-Miles per Hour)
City	20,459	42,838

**D. Vehicle-Miles of Existing Excess Capacity or Deficiencies**

From the calculation of vehicle-miles of existing capacity and demand for each roadway segment, the excess capacity or deficiencies for each direction can be determined. A deficiency exists if a roadway is over capacity or has an hourly traffic volume that is below its acceptable level-of-service in any direction of travel. If this is the case then the deficiency is deducted from the available supply. A summary of existing excess capacity and/or deficiencies for each service area is illustrated in Table 4.4. A complete detailed listing by roadway segment is provided in Appendix B. Roadways with deficiencies in the City of Coppell are Sandy Lake Road, Bethal Road, Royal Lane, Coppell Road, and Denton Tap Road.

**Table 4.4      Excess Capacity and Deficiencies**

Service Area	Excess Capacity (Veh-Miles per Hour)	Deficiencies (Veh-Miles per Hour)
City	20,459	4,133

**4.8      Projected Conditions Analysis**

Chapter 395 of the Texas Local Government Code requires a description of all capital improvements and their cost attributable to new development within the service area. To determine the cost attributable to new development the following information needs to be calculated or supplied: future land use assumptions, vehicle-miles of new demand, a capital improvement plan, vehicle-miles of new capacity supplied by the capital improvements plan and the costs for the roadway improvements. The recommended service unit for assessing impact fees for the impact new development has on roadway



facilities is a combination of the trips generated (vehicles) by the new development during the peak hour and the average trip length (miles) of each trip. The following section describes the methodology used in developing service units for new developments.

#### A. Trip Generation

The trip generation rates are used to determine the number of vehicles added to the roadway system as a result of new development. The trip generation rates were developed for the PM peak weekday period. The trip generation rates were established using the Institute of Transportation Engineers Trip Generation Manual 7th edition.

Development units were chosen by size (e.g.: office building, retail, industrial), by number of units (e.g.: residential, multifamily) and by the number of students (schools). The following development units are typically used:

- *Dwelling Units (DU)* – Total number of habitable dwellings within the development. This should not be mistaken as bedrooms. For example a single-family residence is one dwelling unit; a 50 unit apartment complex is 50 dwelling units.
- *Gross Floor Area (GFA)* – Total square feet of building floor area bounded by the exterior boundary of outer building walls. Uncovered and outdoor patios are excluded from GFA.
- *Acres* – The total number of acres included in the development.
- *Students* – The total number of students attending an institution.

Adjustments to the trip generation rates are necessary to reflect the differences between driveway volumes and the total amount of traffic added to adjacent roadways. The actual “traffic impact” of the new development is based only on the traffic added to the adjacent roadways. The actual traffic added to the adjacent roadways is determined by adjusting the driveway volumes to account for pass-by trips, diverted trips, and internal trips.

- *Pass-by trips* – are those trips attracted to a development from traffic that would otherwise pass-by the site on an adjacent roadway. For example, a stop at a convenience store on the way from the office to home is a pass-by trip for the convenience store. The trip does not create an additional burden on the street system and therefore should not be double-counted. The burden of this type should be assigned to the office and/or residence.
- *Diverted trips* – are those trips that are already on the roadway system and are diverted to the roadway system serving the new development. For example, a trip from home to work along Parkway Boulevard would be a diverted trip if the travel path was changed to Sandy Lake Road the purposes of stopping at the dry cleaners. On a system-wide basis, this trip also does not add a significant

additional burden to the street system so it is not considered in assessing impact fees.

- *Internal trips* – are those that would typically be made in a mixed-use development between two uses within the development, not utilizing a thoroughfare outside the development for that trip. For example, a trip between a shopping center and a restaurant contained within the same site would be considered an internal trip, and does not create any additional burden on the roadway system.

#### B. Trip Length

Trip lengths in miles will be used in conjunction with site trip generation to establish the vehicle-miles of travel, the service unit to be used for assessing impact fees. As with trip generation, trip lengths are used in the development of travel forecasting models for use in assessing roadway needs, as well as for assessing impact fees. As previously stated, chapter 395 of the Texas Local Government Code limits the average trip length to six miles. Each trip has an origin and destination, half of the trip length will be assigned to the origin and half of the trip length will be assigned to the destination. Therefore, the average trip length for a development is half the total trip length, allowing the maximum total trip length under state law to be six miles. The trip length data used in this report was based on information generated in the 1984 and 1994 NCTCOG Workplace Survey and the 2001 National Household Travel Survey.

#### C. Projected Growth and Vehicle-Miles of New Demand

Project growth for roadway impact fees is represented by an increase in the vehicle-miles over a 10-year period. The basis used to calculate the increase in vehicle-miles is from the adopted land use assumptions. These land use assumptions are summarized in the section 2.0. The calculation for the increase in the vehicle-miles due to new development is made up of three components:

- Increase in the acreage for each land use for the 10-year study period
- Trip generation rates for PM peak hour of adjacent street traffic (provided by the ITE Trip Generation Manual, 7<sup>th</sup> edition)
- Average trip length (provided by NCTCOG 1984 and 1994 Workplace Survey and 2001 National Household Travel Survey)

A summary of the vehicle-miles of new demand is illustrated in Table 4.5. A complete detailed listing by land use category is provided in Appendix C.

**Table 4.5 Projected Vehicle-Miles of New Demand**

Service Area	Projected Vehicle-Miles Of New Demand
City	80,702

D. Capital Improvements Plan (CIP)

The capital improvements plan includes roadway improvements that are needed to accommodate growth based on the adopted land use assumptions and vehicle-miles of travel for various types of land uses. The impact fee CIP can only contain roadways which are only included on the city's thoroughfare plan and are of the arterial and collector classification. Freese and Nichols along with City staff evaluated roadway projects for inclusion in the CIP based on: 1) future growth areas, 2) projected 10-year traffic demand, 3) existing conditions, 4) ability to recoup roadway costs (cost share or previously constructed roadways with excess capacity), 5) financial considerations, and 6) staff input. Senate Bill 243 allows for the City to include their share of the cost for state and federal highways to also be included in this plan. At this time no state or federal highways are included in the CIP. The projects included in the Impact Fee Roadway CIP are listed in Table 4.6 and illustrated in Figure 4.2

The following costs were included in the preparation of the 10-year CIP program

- Construction price
- Surveying and engineering fees
- Land acquisition costs
- Fees paid for the preparation of the capital improvements plan
- Projected interest charges and other finance costs

The total projected cost for the 10-year impact fee CIP is \$47,313,269 in 2005 dollars (\$63,405,000 with interest). A detailed Engineer's Opinion of Probable Construction Cost for each roadway is provided in Appendix D. A summary of the cost for the impact fee CIP are provided in Table 4.6

**Table 4.6 Summary of Roadway Cost**

**RECOUPEMENT  
PROJECTS**

No.	ROADWAY	FROM	TO	COST	COST w/ FINANCING
3*	SANDY LAKE RD	DENTON TAP ROAD	MACARTHUR BLVD.	\$11,145,337	\$14,935,000
4*	SANDY LAKE RD	MACARTHUR BLVD.	CITY LIMIT (EAST)	\$5,193,720	\$6,960,000
8*	FREEPORT PKWY	IH-635	BETHAL ROAD	\$1,017,629	\$1,364,000
12*	BELT LINE ROAD	SOUTHWESTERN BLVD.	MACARTHUR BLVD.	\$522,283	\$700,000
Total:				\$17,878,969	\$23,959,000

\*Cost from City Contract Documents

**EXPANSION  
PROJECTS**

No.	ROADWAY	FROM	TO	COST	COST w/ FINANCING
1**	SANDY LAKE ROAD	CITY LIMIT (WEST)	COPPELL ROAD	\$5,802,578	\$7,776,000
2**	SANDY LAKE ROAD	COPPELL ROAD	DENTON TAP RD	\$5,115,927	\$6,856,000
5**	ROYAL LANE FREEPORT	SANDY LAKE ROAD	EXTEND SOUTH	\$771,750	\$1,035,000
6**	PKWY FREEPORT	SH 121	SANDY LAKE RD	\$1,140,436	\$1,529,000
7**	PKWY	RUBY ROAD	SANDY LAKE RD	\$1,627,609	\$2,181,000
9**	BETHEL ROAD	CITY LIMIT (WEST)	FREEPORT PKWY.	\$8,994,000	\$12,052,000
10**	* ROYAL LANE	IH-635	BETHEL ROAD	\$3,394,000	\$4,548,000
11**	* SOUTHWESTER NBLVD.	COPPELL ROAD	CREEK CROSSING	\$1,009,000	\$1,353,000
13**	* MACARTHUR BLVD.	BETHAL SCHOOL RD	BELT LINE ROAD	\$1,579,000	\$2,116,000
Total:				\$29,434,300	\$39,446,000

\*\*Engineer's Probable Construction Cost Estimates provided by the City

\*\*\* Freese and Nichols Conceptual Level Cost Estimates

<b>TOTAL ROADWAY IMPACT FEE CAPITAL IMPROVEMENTS</b>				<b>\$47,313,269</b>	<b>\$63,405,000</b>
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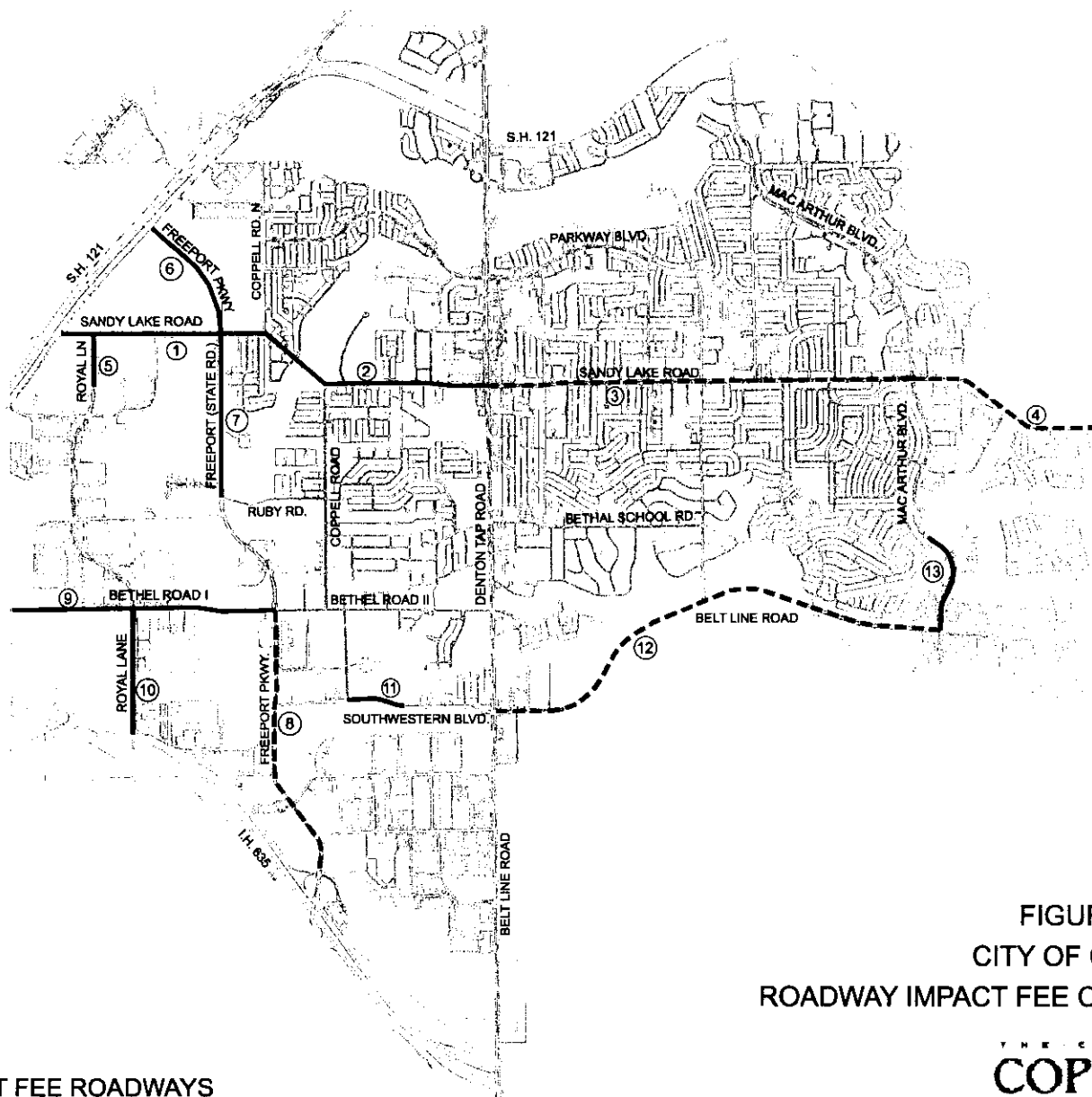
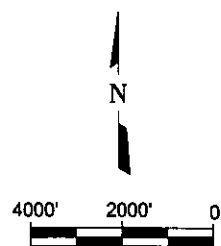


FIGURE 4.2  
CITY OF COPPELL  
ROADWAY IMPACT FEE CAPITAL IMPROVEMENTS



LEGEND:

- IMPACT FEE ROADWAYS
- RECOUPMENT ROADWAYS

**E. Projected Vehicle-Miles of New Capacity (Supply)**

The vehicle-miles of capacity added is calculated in a similar manner as the vehicle-miles of existing capacity supplied.

Vehicle-Miles of New Capacity = Capacity per peak hour per lane x Number of lanes x Length (miles)

The calculated capacity is for the new impact fee roadways. The vehicle-miles of new capacity supplied for each service area is provided in Table 4.7. A complete detailed listing by roadway segment is provided in Appendix E.

**Table 4.7 Projected Vehicle-Miles of New Capacity (Supply)**

Service Area	Projected Vehicle-Miles of New Capacity (Supply)
City	33,413

**F. Vehicle-Miles of Existing Demand on CIP Roadways**

The vehicle-miles of existing demand or the current usage on CIP roadways is a measure of the existing vehicle-miles along a roadway that is included in the capital improvements plan. The demand is calculated from the equation below:

Vehicle-Miles of Demand on CIP roadway = PM peak hour volume x Length of Roadway (miles)

For example: A 3-mile long CIP roadway that has a PM peak hour volume of 400 vehicles per hour:

Vehicle-Miles of Demand = 400 vehicles per hour x 3 miles = 1,200 vehicle-miles per hour

The vehicle-miles of existing demand on CIP roadways are provided in Table 4.8. A complete detailed listing by roadway segment is provided in Appendix E.

**Table 4.8      Vehicle-Miles of Existing Demand on CIP Roadways**

<b>Service Area</b>	<b>Vehicle-Miles Of Existing Demand</b>
<b>City</b>	<b>14,696</b>

**G. Maximum Cost per Service Unit**

The maximum cost per service unit is a calculation of the cost per service unit (dwelling, 1000 sq. ft GFA, acre) for a service area. This maximum cost per service area is the cost of the CIP divided by the growth attributable to new development projected to occur with a 10-year period. Table 4.9 illustrates these calculations for the roadway impact fees. The maximum fee per service unit without a credit is \$337.

**Table 4.9 Calculation of Maximum Impact Fees (Uncredited)**

<b>Line #</b>		<b>Service Area</b>
1	<b>Total Veh-Miles of Capacity Added by the CIP</b>	33,413
	<i>(From Projected Veh-Miles of New Capacity) (Table 4.7)</i>	
2	<b>Total Veh-Miles of Existing Demand on CIP Roads</b>	14,969
	<i>(From Veh-Miles of Existing Demand on CIP Roadways)(Table 4.8)</i>	
3	<b>Total Veh-Mile of Existing Deficiencies on Existing Roads</b>	4,133
	<i>(From Excess Capacity and Deficiencies)(Table 4.4)</i>	
4	<b>Net Amount of Veh-Mile Capacity Added</b>	14,311
	<i>(Line #1-Line #2-Line #3)</i>	
5	<b>Total Eligible Cost of CIP Within Service Area</b>	\$63,405,000
	<i>(From Engineer's Opinion of Probable Construction Costs)(Table 4.6)</i>	
6	<b>Cost of Net Capacity Supplied</b>	\$27,157,029
	<i>(Net of Capacity Added/Total of Capacity Added)*CIP Cost - (Line #4/Line #1)*(Line #5)</i>	
7	<b>Cost to Meet Existing Needs and Usage</b>	\$36,247,971
	<i>(Total Cost of CIP-Cost of Net Capacity Supplied) - Line #5-Line #6</i>	
8	<b>Total Veh-Mile of New Demand Over 10 Years</b>	80,702
	<i>(From Projected Vehicle-Miles of New Demand)(Table 4.5)</i>	
9	<b>% of Capacity Added Attributed to New Growth</b>	563.9%
	<i>(Total of New Demand/Net Amount of Capacity Added) - Line #8/Line #4</i>	
10	<b>If Line 8 &gt; Line 4, Reduce Line 9 to 100%</b>	100.0%
11	<b>Cost of Capacity Added Attributed to New Growth</b>	\$27,157,029
	<i>(Cost of Net Capacity Supplied * Cost Attributed to New Growth) - Line #6*Line#10</i>	
12	<b>Maximum Fee per Service Unit - Without Credit</b>	\$337
	<i>(Cost of Net Capacity Attributed to New Growth/Total Veh-Mile of New Demand) - Line #11/Line #8</i>	
13	<b>Percent of Fee Recoverable</b>	50%
14	<b>Maximum Assessable Fee Per Service Unit</b>	\$168
	<i>(Line #12*Line #13)</i>	

**H. Land Use / Vehicle-Mile Equivalency Table**

A land use/vehicle-mile equivalency table establishes the service unit rate for various land uses. This table is a result of combining PM peak hour trip generation rates with average trip length information for various land uses. These rates are based on an appropriate development unit for each land use. For example; office, retail, and light industrial, are based on development of 1,000 square feet of gross floor area, while single-family and multi-family residential is based on dwelling units. The City of Coppell's Land-Use Vehicle Mile Equivalency Table is made up of five main land uses with specific use categories, they are: residential, office, retail/commercial, light



industrial, and institutional. Table 4.10 illustrates the total service units generated by the various land uses. Appendix F provides the land-uses used for this table.

**Table 4.10 Land-Use Vehicle-Mile Equivalency Table**

ITE Land Use	Dev. Unit	Trip Rate	Trip Length	Veh-Mi Per Dev Unit
<b>Residential</b>				
Residential (Medium/Low)	DU	1.01	4.20	<b>4.24</b>
Residential (High Density)	DU	0.62	4.20	<b>2.60</b>
Others Not Specified	DU	1.01	4.20	<b>4.24</b>
<b>Office</b>				
General Office Building	1000 sq. ft.	1.49	4.80	<b>7.15</b>
Medical / Dental Office	1000 sq. ft.	3.72	4.80	<b>17.86</b>
Others Not Specified	1000 sq. ft.	1.49	4.80	<b>7.15</b>
<b>Retail / Commercial</b>				
Shopping Center	1000 sq. ft.	2.48	3.20	<b>7.92</b>
Home Improvement Superstore	1000 sq. ft.	1.72	1.95	<b>3.34</b>
Super market	1000 sq. ft.	6.69	1.05	<b>7.02</b>
Restaurant	1000 sq. ft.	6.12	1.90	<b>11.62</b>
Fast food with drive thru	1000 sq. ft.	17.32	2.15	<b>37.24</b>
Gasoline/Service Station with Conv	Fuel Positions	5.89	0.90	<b>5.30</b>
Hotel	Rooms	0.59	3.20	<b>1.89</b>
Bank with Drive Thru	1000 sq. ft.	27.44	1.25	<b>34.31</b>
Others Not Specified	1000 sq. ft.	2.48	3.20	<b>7.92</b>
<b>Light Industrial</b>				
General Light Industrial	1000 sq. ft.	0.98	3.30	<b>3.23</b>
Industrial Park	1000 sq. ft.	0.86	3.30	<b>2.84</b>
Mini Warehouse (Self Storage)	1000 sq. ft.	0.26	3.30	<b>0.86</b>
Others Not Specified	1000 sq. ft.	0.98	3.30	<b>3.23</b>
<b>Institutional</b>				
Primary/Middle School	Students	0.15	2.10	<b>0.32</b>
High School	Students	0.14	2.10	<b>0.29</b>
Jr. / Community College	Students	0.12	3.00	<b>0.36</b>
Day Care Center	Students	0.82	2.10	<b>1.72</b>
Church	1000 sq. ft.	0.66	1.45	<b>0.96</b>
Others Not Specified	1000 sq. ft.	0.66	1.45	<b>0.96</b>

#### 4.9 Calculating Impact Fees

The calculation of the actual fee charged to development is a two-part process. These parts are:

Part 1:            Determine number of service units (vehicle-miles) generated by the development using the land-use vehicle-mile equivalency table.

$$\begin{aligned} & \text{No. of Development} \quad x \quad \text{Vehicle-miles (Total Service Units)} \\ & \text{Units} \quad \quad \quad \text{per development unit} \\ & = \text{Development's Vehicle-miles} \end{aligned}$$

Part 2:            Calculate the impact due by new development. This fee based on the cost per service unit for the service area where the development is located.

$$\begin{aligned} & \text{Development's Vehicle-miles (from part 1)} \quad x \quad \text{Cost per vehicle-mile} \\ & \text{(from CIP calculation)} \\ & = \text{Impact Fee due from development} \end{aligned}$$

Examples: The following fee would be assessed to new developments which has a maximum (Assessable) fee per service unit of \$168.

A. Single-Family Dwelling

$$\begin{aligned} & (1 \text{ dwelling unit} \times 4.24 \text{ vehicle-miles}) / 1 \text{ dwelling unit} = 4.24 \text{ vehicle-miles} \\ & 4.24 \text{ Vehicle-miles} \times \$168 / \text{vehicle-mile} = \$712 \end{aligned}$$

B. 10,000 square foot (s.f.) General Office Building

$$\begin{aligned} & (10,000 \text{ s.f.} \times 7.15 \text{ vehicles-miles}) / 1000 \text{ s.f. units} = 71.50 \text{ vehicle-miles} \\ & 71.50 \text{ vehicle-miles} \times \$168 / \text{vehicle-mile} = \$12,012 \end{aligned}$$

C. 60,000 s.f. Retail Shopping Center

$$\begin{aligned} & (60,000 \text{ s.f.} \times 7.92 \text{ vehicle-miles}) / 1,000 \text{ s.f. units} = 475.20 \text{ vehicle-miles} \\ & 475.20 \text{ vehicle-miles} \times \$168 / \text{vehicle-mile} = \$79,833 \end{aligned}$$

D. 100,000 s.f. Light Industrial Development

$$\begin{aligned} & (100,000 \text{ s.f.} \times 3.23 \text{ vehicle-miles}) / 1,000 \text{ s.f. units} = 323 \text{ vehicle-miles} \\ & 323 \text{ vehicle-miles} \times \$168 / \text{vehicle-mile} = \$54,264 \end{aligned}$$

E. 4,000 Student Junior/Community College

$$\begin{aligned} & (4,000 \text{ Students.} \times 0.36 \text{ vehicle-miles}) / 4,000 \text{ units} = 1,440 \text{ vehicle-miles} \\ & 1,440 \text{ vehicle-miles} \times \$168 / \text{vehicle-mile} = \$241,920 \end{aligned}$$

# **Appendix A**

## **Existing Roadway Inventory**

**Coppell Roadway Impact Fees 2005**

Existing Roadway Inventory

Street	From	To	Length (FT)	Pavement Type	No. of Lanes	Width	Traffic Volume (PM) N/E	Traffic Volume (PM) S/W	TDP Config
PARKWAY BLVD	COPPELL ROAD	DENTON TAP ROAD	6210	CONC	4D	46' C	371	384	C4D
PARKWAY BLVD	DENTON TAP ROAD	MOORE ROAD	5400	CONC	4D	46' C	435	337	C4D
PARKWAY BLVD	MOORE ROAD	SAMUEL BLVD.	1650	CONC	2U	43' C	435	337	C4D
PARKWAY BLVD	SAMUEL BLVD.	MACARTHUR BLVD.	3550	CONC	4U	43' C	435	337	C4D
SANDY LAKE ROAD	CITY LIMIT (WEST)	COPPELL ROAD	4980	ASP	2U	24'	353	374	C4D/6
SANDY LAKE ROAD	COPPELL ROAD	DENTON TAP ROAD	5870	ASP	2U	24'	836	587	C4D
SANDY LAKE ROAD	DENTON TAP ROAD	MACARTHUR BLVD.	10330	CONC	4D	50' C	1,012	923	C4D
*SANDY LAKE ROAD	MACARTHUR BLVD.	CITY LIMIT (EAST)	4920	ASP	2U	22'	672	857	C4D/6
BETHEL ROAD	CITY LIMIT (WEST)	FREEPORT PKWY.	6430	CONC	2U	20'	371	326	C4D
BETHEL ROAD	FREEPORT PKWY.	DENTON TAP ROAD	5310	ASP	2U	20'	372	335	C2U
SOUTHWESTERN BLVD	FREEPORT PKWY.	COPPELL ROAD	1790	CONC	2U	44' C	242	197	C4U
SOUTHWESTERN BLVD	COPPELL ROAD	DENTON TAP ROAD	3610	ASP	2U	22'	242	197	C4U
BELT LINE ROAD	CITY LIMIT (SOUTH)	SOUTHWESTERN BLVD.	8450	CONC	6D	33' C	2,891	1,335	P6D
BELT LINE ROAD	SOUTHWESTERN BLVD.	MACARTHUR BLVD.	12090	CONC	4D	23' C	1,236	574	P6D
BELT LINE ROAD	MACARTHUR BLVD.	CITY LIMIT (EAST)	5810	CONC	6D	33' C	1,284	1,515	P6D
ROYAL LANE	CITY LIMIT (SOUTH)	BETHEL ROAD	2990	CONC	4D	24' C	614	557	P6D
ROYAL LANE	BETHEL ROAD	SANDY LAKE ROAD	6140	CONC	4D	46' C	441	397	C4D/6
ROYAL LANE	CREEKVIEW DR.	SANDY LAKE ROAD	1240	CONC	2U	23' C	441	397	C4D/6
FREEPORT PKWY.	IH-635	BETHEL ROAD	6740	CONC	4D	42' C	1,196	400	C4D/6
STATE ROAD	BETHEL ROAD	RUBY ROAD	3220	CONC	4D	46' C	340	151	C4D/6
STATE ROAD	RUBY ROAD	SANDY LAKE ROAD	3940	A/C	2U	21' C	340	151	C4D/6
COPPELL ROAD	SOUTHWESTERN BLVD.	BETHEL ROAD	2140	ASP	2U	23'	117	96	C2U
COPPELL ROAD	BETHEL ROAD	SANDY LAKE ROAD	5360	ASP	2U	23'	520	193	C2U
DENTON TAP ROAD	SOUTHWESTERN BLVD.	SANDY LAKE ROAD	7860	CONC	6D	64' C	2,806	1,357	P6D
DENTON TAP ROAD	SANDY LAKE ROAD	CITY LIMIT (NORTH)	6020	CONC	6D	64' C	2,732	939	P6D
MACARTHUR BLVD.	BELT LINE ROAD	SANDY LAKE ROAD	9690	CONC	6D	42' C	1,588	740	P6D
MACARTHUR BLVD.	SANDY LAKE ROAD	CITY LIMIT (NORTH)	6590	CONC	6D	42' C	1,205	700	P6D

\*Under Construction as a 4-lane Divided Local Arterial (C4D)

## **Appendix B**

### **Existing Roadway Capacity, Demand, Excess Capacity and Deficiencies**

**Coppell Roadway Impact Fees 2006**  
Existing Roadway Capacity, Demand, Excess Capacity and Deficiencies

Roadway	From	To	Length (Feet)	Length (Miles)	Lanes	Type	Veh-Mi Capacity Pk-Hr Per lane	PM Peak-Hour Volume Direction		Total Volume	% in Service Area	Directional Supply Peak-Hour	Veh-Mi Total Supply Peak-Hour	Veh-Mi Direction A Demand Peak-Hour	Veh-Mi Direction B Demand Peak-Hour	Veh-Mi Total Demand Peak-Hour	Excess Capacity Direction A Veh-Mi	Excess Capacity Direction B Veh-Mi	Total Excess Capacity Peak-Hour Veh-Mi	Excess Deficiencies Direction A veh-Mi	Excess Deficiencies Direction B veh-Mi	Total Deficiencies Peak-Hour veh-Mi
								A	B													
								Northbound Eastbound	Southbound Westbound													
PARKWAY BLVD	COPPELL ROAD	DENTON TAP ROAD	6210	1.18	4	P6D	700	371	384	755	100%	1647	3,293	436	452	888	1,210	1,195	2,405	0	0	0
PARKWAY BLVD	DENTON TAP ROAD	MOORE ROAD	5400	1.02	4	P6D	700	435	337	772	100%	1432	2,864	445	345	790	987	1,087	2,074	0	0	0
PARKWAY BLVD	MOORE ROAD	SAMUEL BLVD.	1650	0.31	2	C2U	350	435	337	772	100%	109	219	136	105	241	0	4	4	-27	0	-27
PARKWAY BLVD	SAMUEL BLVD.	MACARTHUR BLVD.	3550	0.67	4	C4U	440	435	337	772	100%	592	1,183	292	227	519	299	365	664	0	0	0
SANDY LAKE ROAD	CITY LIMIT (WEST)	COPPELL ROAD	4980	0.94	2	C2U	350	353	374	727	100%	330	660	333	353	686	0	0	0	-3	-23	-25
SANDY LAKE ROAD	COPPELL ROAD	DENTON TAP ROAD	5870	1.11	2	C2U	350	835	587	1,423	100%	389	778	329	653	1,582	0	0	0	-540	-263	-804
SANDY LAKE ROAD	DENTON TAP ROAD	MACARTHUR BLVD.	10330	1.96	4	C4D	625	1,012	923	1,935	100%	2446	4,891	1,980	1,806	3,786	466	640	1,105	0	0	0
SANDY LAKE ROAD	MACARTHUR BLVD.	CITY LIMIT (EAST)	4920	0.93	4	C4D	625	672	867	1,529	100%	1165	2,330	626	798	1,424	539	366	905	0	0	0
BETHEL ROAD	CITY LIMIT (WEST)	FREEPORT PKWY.	6430	1.22	2	C2U	350	371	326	697	100%	426	852	452	397	849	0	29	29	-26	0	-26
BETHEL ROAD	FREEPORT PKWY.	DENTON TAP ROAD	5310	1.01	2	C2U	350	372	335	707	100%	352	704	374	337	711	0	15	15	-22	0	-22
SOUTHWESTERN BLVD	FREEPORT PKWY.	COPPELL ROAD	1790	0.34	4	C4U	440	242	197	439	100%	298	597	82	67	149	216	232	448	0	0	0
SOUTHWESTERN BLVD	COPPELL ROAD	DENTON TAP ROAD	3610	0.68	2	C2U	350	242	197	439	100%	239	479	165	135	300	74	105	179	0	0	0
BELT LINE ROAD	CITY LIMIT (SOUTH)	SOUTHWESTERN BLVD.	8450	1.60	6	P6D	700	2,891	1,335	4,226	50%	1680	3,361	2,313	1,068	3,382	0	612	612	-633	0	-633
BELT LINE ROAD	SOUTHWESTERN BLVD	MACARTHUR BLVD.	12090	2.29	4	C4D	625	1,236	574	1,810	50%	1431	2,862	1,415	657	2,072	16	774	790	0	0	0
BELT LINE ROAD	MACARTHUR BLVD.	CITY LIMIT (EAST)	5810	1.10	6	P6D	700	1,284	1,515	2,799	100%	2311	4,622	1,413	1,667	3,080	898	644	1,542	0	0	0
ROYAL LANE	CITY LIMIT (SOUTH)	BETHEL ROAD	2990	0.57	4	C4D	625	614	557	1,171	100%	708	1,416	348	315	663	360	392	753	0	0	0
ROYAL LANE	BETHEL ROAD	SANDY LAKE ROAD	6140	1.16	4	C4D	625	441	397	838	100%	1454	2,907	513	482	974	941	992	1,933	0	0	0
ROYAL LANE	CREEKVIEW DR.	SANDY LAKE ROAD	1240	0.23	2	C2U	350	441	397	838	100%	82	164	104	93	197	0	0	0	-21	-11	-32
FREEPORT PKWY.	HH-835	BETHEL ROAD	6740	1.28	4	C4D	625	1,196	400	1,596	100%	1596	3,191	1,527	511	2,037	69	1,085	1,154	0	0	0
STATE ROAD	BETHEL ROAD	RUBY ROAD	3220	0.61	4	C4D	625	340	151	491	100%	762	1,525	207	92	299	555	670	1,225	0	0	0
STATE ROAD	RUBY ROAD	SANDY LAKE ROAD	3940	0.75	2	C2U	350	340	151	491	100%	261	522	254	113	366	7	148	156	0	0	0
COPPELL ROAD	SOUTHWESTERN BLVD	BETHEL ROAD	2140	0.41	2	C2U	350	117	96	213	100%	142	284	48	39	86	94	103	197	0	0	0
COPPELL ROAD	BETHEL ROAD	SANDY LAKE ROAD	5360	1.02	2	C2U	350	520	193	713	100%	355	711	528	196	724	0	159	159	-173	0	-173
DENTON TAP ROAD	SOUTHWESTERN BLVD	SANDY LAKE ROAD	7860	1.48	6	P6D	700	2,808	1,357	4,163	100%	3126	6,252	4,177	2,020	6,197	0	1,106	1,106	-1,051	0	-1,051
DENTON TAP ROAD	SANDY LAKE ROAD	CITY LIMIT (NORTH)	6020	1.14	6	P6D	700	2,732	939	3,671	100%	2394	4,789	3,115	1,071	4,185	0	1,324	1,324	-721	0	-721
MACARTHUR BLVD.	BELT LINE ROAD	SANDY LAKE ROAD	9690	1.84	4	C4D	625	1,588	740	2,328	100%	2294	4,588	2,914	1,358	4,272	0	936	936	-620	0	-620
MACARTHUR BLVD.	SANDY LAKE ROAD	CITY LIMIT (NORTH)	6590	1.25	4	C4D	625	1,205	700	1,905	100%	1560	3,120	1,504	874	2,378	56	686	743	0	0	0
Subtotal				28.09									59,163	26,630	16,208	42,838	6,788	13,671	20,459	-3,836	-297	-4,133

Traffic counts conducted in March 2005

Roadway Facility	Type Designation	Hourly Vehicle-Mile Capacity per Lane Mile of Roadway Facility for LOS "C/D"
Principal Arterial - Divided	P6D	700
Divided Local Arterials	C4D	625
Undivided Collectors - 4 lane	C4U	440
Undivided Collectors - 2 Lane	C2U	350

# **Appendix C**

## **Projected Vehicle-Miles of New Demand**

# Projected Vehicle Miles of New Demand

## Year 2005

Land Use	TOTAL SERVICE UNITS <sup>1</sup> (Veh-Mi/Dev Unit)	Unit of Trip Generation	No. of Units per Acre <sup>2</sup>	YEAR 2005 (EXISTING)	
				Acres	Veh-Mile <sup>3</sup>
<b>Commercial</b>					
Commercial/Office/Retail	5.14	1000 sq.ft. GFA	10.89	193	10,807
<sup>4</sup> Freeway Commercial/Office/Retail	5.14	1000 sq.ft. GFA	10.89	128	4,301
*Light Industrial	2.38	1000 sq.ft. GFA	15.24	1,074	38,890
Public Institutional	2.90	1000 sq.ft. GFA	15.24	410	18,106
<b>Residential</b>					
Residential High Density	2.60	DU	16	174	7,250
Residential Medium Density	4.24	DU	4	2,233	37,890
Residential Low Density	4.24	DU	2	493	4,183
<b>Parks and Open Space</b>	0.54	Acres	1	908	491
<b>Total</b>				<b>5,613</b>	<b>121,916</b>

\* Assumed 77% of the existing developed non-residential is industrial

## Year 2015

Land Use	TOTAL SERVICE UNITS <sup>1</sup> (Veh-Mi/Dev Unit)	Unit of Trip Generation	No. of Units per Acre <sup>2</sup>	YEAR 2015 (PROJECTED)	
				Acres	Veh-Mile <sup>3</sup>
<b>Commercial</b>					
Commercial/Office/Retail	5.14	1000 sq.ft. GFA	10.89	423	23,686
<sup>4</sup> Freeway Commercial/Office/Retail	5.14	1000 sq.ft. GFA	10.89	792	26,609
Light Industrial	2.38	1000 sq.ft. GFA	15.24	1,940	70,248
Public Institutional	2.90	1000 sq.ft. GFA	15.24	645	28,484
<b>Residential</b>					
Residential High Density	2.60	DU	16	194	8,083
Residential Medium Density	4.24	DU	4	2,392	40,587
Residential Low Density	4.24	DU	2	500	4,242
<b>Parks and Open Space</b>	0.54	Acres	1	1,255	678
<b>Total</b>				<b>8,141</b>	<b>202,619</b>

## Difference 2005-2015

Land Use	TOTAL SERVICE UNITS <sup>1</sup> (Veh-Mi/Dev Unit)	Unit of Trip Generation	No. of Units per Acre <sup>2</sup>	INCREASE IN VEH-MILES	
				Acres	Veh-Mile <sup>3</sup>
<b>Commercial</b>					
Commercial/Office/Retail	5.14	1000 sq.ft. GFA	10.89	230	12,879
<sup>4</sup> Freeway Commercial/Office/Retail	5.14	1000 sq.ft. GFA	10.89	664	22,309
Light Industrial	2.38	1000 sq.ft. GFA	15.24	866	31,358
Public Institutional	2.90	1000 sq.ft. GFA	15.24	235	10,378
<b>Residential</b>					
Residential High Density	2.60	DU	16	20	833
Residential Medium Density	4.24	DU	4	159	2,698
Residential Low Density	4.24	DU	2	7	59
<b>Parks and Open Space</b>	0.54	Acres	1	347	188
<b>Total</b>				<b>2,528</b>	<b>80,702</b>

## ACRES TO UNIT OF TRIP GENERATION CONVERSION FACTORS

Number of Dwelling Units per Acre (High Density)	16 units per acre
Number of Dwelling Units per Acre (Medium Density)	4 units per acre
Number of Dwelling Units per Acre (Low Density)	2 units per acre
Gross Floor Area per Acre (Commercial) 25% coverage	10.89* sq ft per acre
Gross Floor Area per Acre (Light Industrial) 35% coverage	15.24* sq ft per acre
Gross Floor Area per Acre (Public Institutional) 35% coverage	15.24* sq ft per acre

\*all #'s are for 1,000 square feet

## Notes:

<sup>1</sup> See Average Land Use Trip Calculations

<sup>2</sup> See Trip Generation Conversion Factors

<sup>3</sup> Calculated by multiplying the Total Service Units by the No. of units per Acres by the Acres provided in the land use assumptions

<sup>4</sup> Reduce the Freeway Commercial/Office/Retail by 40%.  
The 40% represents the number of trips added to the Freeway system and not the Coppell Roadway System



# **Appendix D**

## **Engineer's Opinion of Probable Construction Cost**

# SUMMARY OF PROJECT COST

## RECOUPEMENT PROJECTS

PROJECT	ROADWAY	FROM	TO	COST	COST w/ FINANCING
3*	SANDY LAKE ROAD	DENTON TAP ROAD	MACARTHUR BLVD.	\$11,145,337	\$14,935,000
4*	SANDY LAKE ROAD	MACARTHUR BLVD.	CITY LIMIT (EAST)	\$5,193,720	\$6,960,000
8*	FREEPORT PARKWAY	IH-635	BETHAL ROAD	\$1,017,629	\$1,364,000
12*	BELT LINE ROAD	SOUTHWESTERN BLVD.	MACARTHUR BLVD.	\$522,283	\$700,000
Total:				\$17,878,969	\$23,959,000

\*Cost from City Contract Documents

## EXPANSION PROJECTS

PROJECT	ROADWAY	FROM	TO	COST	COST w/ FINANCING
1**	SANDY LAKE ROAD	CITY LIMIT (WEST)	COPPELL ROAD	\$5,802,578	\$7,776,000
2**	SANDY LAKE ROAD	COPPELL ROAD	DENTON TAP ROAD	\$5,115,927	\$6,856,000
5**	ROYAL LANE	SANDY LAKE ROAD	EXTEND SOUTH	\$771,750	\$1,035,000
6**	FREEPORT PKWY	SH 121	SANDY LAKE ROAD	\$1,140,436	\$1,529,000
7**	FREEPORT PKWY	RUBY ROAD	SANDY LAKE ROAD	\$1,627,609	\$2,181,000
9**	BETHEL ROAD	CITY LIMIT (WEST)	FREEPORT PKWY.	\$8,994,000	\$12,052,000
10***	ROYAL LANE	IH-635	BETHEL ROAD	\$3,394,000	\$4,548,000
11***	SOUTHWESTERN BLVD.	COPPELL ROAD	CREEK CROSSING	\$1,009,000	\$1,353,000
13***	MACARTHUR BLVD.	BETHAL SCHOOL ROAD	BELT LINE ROAD	\$1,579,000	\$2,116,000
Total:				\$29,434,300	\$39,446,000

\*\*Engineer's Probable Construction Cost Estimates provided to the City by Engineering Consultants

\*\*\* Freese and Nichols Conceptual Level Cost Estimates

TOTAL ROADWAY IMPACT FEE CAPITAL IMPROVEMENTS				\$47,313,269	\$63,405,000
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# CITY OF COPPELL RECOUPEMENT COST

<b>Sandy Lake Road</b>		<b>Project No.: 3</b>
Denton Tap to MacArthur		
Construction	\$	9,441,368
Design	\$	1,030,683
Geotech	\$	30,920
Misc. TXU street lights, ect.	\$	193,073
Misc. tree removal, sprinkler repair	\$	85,275
Right of way	\$	364,018
		<b>\$ 11,145,337</b>
<b>Sandy Lake Road</b>		<b>Project No.: 4</b>
Macarthur to E. city limits		
Construction	\$	4,828,324
Design	\$	134,106
Geotech	\$	32,231
Misc. ADA review	\$	575
Misc. tree removal	\$	14,508
Misc. Archaeology survey	\$	6,000
Right of way	\$	134,116
Bridge over Elm Fork		
Right of way	\$	43,860
		<b>\$ 5,193,720</b>
<b>Beltline Road</b>		<b>Project No.: 12</b>
Denton Tap to MacArthur		
Construction	\$	438,926
Misc. TXU streetlights	\$	70,476
Right of way	\$	12,881
		<b>\$ 522,283</b>
<b>Bethel Road</b>		<b>Project No.: 9</b>
Freeport to W. city limits		
Engineer's est. of cost	\$	8,277,387
Design	\$	545,480
Misc. relocate explorer pipeline	\$	48,000
Right of way	\$	123,133
		<b>\$ 8,994,000</b>
<b>Royal Lane</b>		<b>Project No.: 5</b>
Sandy Lake South		
Engineer's est. of cost	\$	753,000
Design	\$	18,750
		<b>\$ 771,750</b>
<b>Sandy Lake Road</b>		<b>Project No.: 1</b>
SH121 to Coppell Rd. N.		
Engineer's est. of cost	\$	5,014,000
Design	\$	451,468
Right of way	\$	337,110
		<b>\$ 5,802,578</b>

# **CITY OF COPPELL RECOUPEMENT COST**

<b>Sandy Lake Road</b>		<b>Project No.: 2</b>	
Coppell Rd. N. to Denton Tap			
Engineer's est. of cost	\$	4,238,725	
Design	\$	677,202	
Right of way (est.)	\$	200,000	
		\$	<b>5,115,927</b>
<b>Royal Lane</b>		<b>Project No.: 10</b>	
IH635 to Bethel			
Drainage cost	\$	224,023	
Misc. RR crossing	\$	436,579	
Right of way	\$	20,167	
		\$	<b>680,769</b>
<b>Freeport Parkway</b>		<b>Project No.: 8</b>	
IH635 to Bethel			
Construction	\$	900,364	
Design	\$	4,760	
Misc. RR crossing	\$	112,505	
		\$	<b>1,017,629</b>
<b>Freeport Parkway</b>		<b>Project No.: 6</b>	
Sandy Lake to SH121			
Engineer's est. of cost	\$	-	
*( \$2,559,780 from NCTCOG)			
Design	\$	460,000	
Geotech	\$	40,250	
Right of way (est.)	\$	640,186	
**(\$1,080,214 from NCTCOG)			
		\$	<b>1,140,436</b>
<b>Freeport Parkway</b>		<b>Project No.: 7</b>	
Ruby to Sandy Lake			
Engineer's est. of cost	\$	730,609	
*( \$3,368,000 from NCTCOG)			
Design	\$	632,500	
Geotech	\$	57,500	
Right of way (est.)	\$	207,000	
		\$	<b>1,627,609</b>

**City of Coppell, Texas**  
**Conceptual Engineer's Opinion of Probable Construction Cost Estimate**  
**Southwestern Blvd.**

Roadway Description:		Quantity	Unit	Project Summary:	
Roadway Length		1,500	LF	4-Lane Undivided from Coppell Rd.	
Right-of-Way Width		70	FT	to Denton Tap Road	
Roadway Width (BOC - BOC)		49	FT		
Undivided Roadway = 1 , Divided Roadway = 2		1			
Item No.	Item Description	Date Performed: 6/8/05			
		Quantity	Unit	Unit Cost	Total Cost
1	Mobilization (5% of Construction Cost)	1	LS	\$40,000.00	\$40,000
2	Right of Way Preparation	10	ACRE	\$2,000.00	\$20,000
3	Unclassified Street Excavation or Embankment	2,800	CY	\$15.00	\$42,000
4	8" Reinforced Concrete Pavement	9,000	SY	\$35.00	\$315,000
5	8" Lime or Cement Stabilized Subgrade	9,400	SY	\$4.00	\$37,600
6	Lime or Cement for Stabilization (40lbs/SY)	200	TON	\$100.00	\$20,000
7	6" Monolithic Curb	3,300	LF	\$5.00	\$16,500
8	Sidewalk and Ramps	15,000	SF	\$4.00	\$60,000
9	Drainage Improvements (RCP, Inlets, MH, Outfalls)	1	LS	\$143,000.00	\$143,000
10	Traffic Signals	0	LS	\$120,000.00	\$0
11	Hydromulching	2,200	SY	\$1.00	\$2,200
12	Top Soil	2,200	SY	\$2.00	\$4,400
13	Pavement Markings & Signage	6,000	LF	\$1.00	\$6,000
14	Traffic Control	1	LS	\$15,000.00	\$15,000
15	Erosion Control	1	LS	\$9,000.00	\$9,000
16	Landscaping and Irrigation	0	LS	\$29,000.00	\$0
17	Lighting (Foundations, Poles, Conduit, Conductors)	0	EA	\$4,000.00	\$0
Subtotal Construction Cost Estimate					\$730,700
Contingency		20%			\$146,200
Total Construction Cost Estimate					\$876,900
Right-of-Way Cost		-	SF	\$3.00	\$0.00
Engineering Services (10% of Construction Cost)		10.0%			\$87,700.00
Surveying Services (3% of Construction Cost)		3.0%			\$26,400.00
Geotechnical Services (1% of Construction Cost)		1.0%			\$8,800.00
Testing (1% of Construction Cost)		1.0%			\$8,800.00
*Total Capital Cost (Based on Unit Prices for May 2005)					\$1,009,000.00
*Total Capital Cost Per Foot					\$680.00
*Future Capital Cost (Based on 3% Inflation for 10 years)					\$1,353,000.00

\*This estimate does not include Legal, Administration, or Financial Cost

**City of Coppell, Texas**  
**Conceptual Engineer's Opinion of Probable Construction Cost Estimate**  
**Royal Lane**

Roadway Description:		Quantity	Unit	Project Summary:	
Roadway Length		2,990	LF	6-Lane Divided from IH 635 to Bethal Rd.	
Right-of-Way Width		110	FT		
Roadway Width (BOC - BOC)		68	FT		
Undivided Roadway = 1 , Divided Roadway = 2		2			
Item No.	Item Description	Date Performed: 6/8/05			
		Quantity	Unit	Unit Cost	Total Cost
1	Mobilization (5% of Construction Cost)	1	LS	\$100,000.00	\$100,000
2	Right of Way Preparation	10	ACRE	\$2,000.00	\$20,000
3	Unclassified Street Excavation or Embankment	7,600	CY	\$15.00	\$114,000
4	8" Reinforced Concrete Pavement	24,900	SY	\$35.00	\$871,500
5	8" Lime or Cement Stabilized Subgrade	25,600	SY	\$4.00	\$102,400
6	Lime or Cement for Stabilization (40lbs/SY)	600	TON	\$100.00	\$60,000
7	6" Monolithic Curb	13,200	LF	\$5.00	\$66,000
8	Sidewalk and Ramps	29,900	SF	\$4.00	\$119,600
9	Drainage Improvements (RCP, Inlets, MH, Outfalls)	1	LS	\$224,023.00	\$224,023
10	Traffic Signals	0	LS	\$120,000.00	\$0
11	Hydromulching	11,300	SY	\$1.00	\$11,300
12	Top Soil	11,300	SY	\$2.00	\$22,600
13	Pavement Markings & Signage	12,000	LF	\$1.00	\$12,000
14	Traffic Control	1	LS	\$29,000.00	\$29,000
15	Erosion Control	1	LS	\$17,000.00	\$17,000
16	Landscaping and Irrigation	1	LS	\$57,000.00	\$57,000
17	Lighting (Foundations, Poles, Conduit, Conductors)	20	EA	\$4,000.00	\$80,000
18	Misc. RR Crossing	1	LS	\$436,579.00	\$436,579
Subtotal Construction Cost Estimate					\$2,343,100
Contingency		20%			\$468,700
Total Construction Cost Estimate					\$2,811,800
Right-of-Way Cost		53,200	SF	\$3.00	\$159,600.00
Engineering Services (10% of Construction Cost)		10.0%			\$281,200.00
Surveying Services (3% of Construction Cost)		3.0%			\$84,400.00
Geotechnical Services (1% of Construction Cost)		1.0%			\$28,200.00
Testing (1% of Construction Cost)		1.0%			\$28,200.00
*Total Capital Cost (Based on Unit Prices for May 2005)					\$3,394,000.00
*Total Capital Cost Per Foot					\$1,140.00
*Future Capital Cost (Based on 3% Inflation for 10 years)					\$4,548,000.00

\*This estimate does not include Legal, Administration, or Financial Cost

**City of Coppell, Texas**  
**Conceptual Engineer's Opinion of Probable Construction Cost Estimate**  
**MacArthur Boulevard**

Roadway Description:		Quantity	Unit	Project Summary:	
Roadway Length		2,630	LF	6-lane principal arterial from Sandy Lake Rd.	
Right-of-Way Width		110	FT	to Belt Line Road	
Roadway Width (BOC - BOC)		25	FT		
Undivided Roadway = 1 , Divided Roadway = 2		1			
Item No.	Item Description	Date Performed: 6/8/05			Total Cost
		Quantity	Unit	Unit Cost	
1	Mobilization (5% of Construction Cost)	1	LS	\$50,000.00	\$50,000
2	Right of Way Preparation	0	ACRE	\$2,000.00	\$0
3	Unclassified Street Excavation or Embankment	2,500	CY	\$15.00	\$37,500
4	8" Reinforced Concrete Pavement	8,100	SY	\$35.00	\$283,500
5	8" Lime or Cement Stabilized Subgrade	8,700	SY	\$4.00	\$34,800
6	Lime or Cement for Stabilization (40lbs/SY)	200	TON	\$100.00	\$20,000
7	6" Monolithic Curb	5,800	LF	\$5.00	\$29,000
8	Sidewalk and Ramps	26,300	SF	\$4.00	\$105,200
9	Drainage Improvements (RCP, Inlets, MH, Outfalls)	1	LS	\$25,000.00	\$25,000
10	Traffic Signals	1	LS	\$120,000.00	\$120,000
11	Hydromulching	22,600	SY	\$1.00	\$22,600
12	Top Soil	22,600	SY	\$2.00	\$45,200
13	Pavement Markings & Signage	10,600	LF	\$1.00	\$10,600
14	Traffic Control	1	LS	\$25,000.00	\$25,000
15	Erosion Control	1	LS	\$15,000.00	\$15,000
16	Landscaping and Irrigation	1	LS	\$30,000.00	\$30,000
17	Lighting (Foundations, Poles, Conduit, Conductors)	0	EA	\$4,000.00	\$0
<b>Subtotal Construction Cost Estimate</b>					<b>\$853,400</b>
<b>Contingency</b>					<b>20%</b>
<b>Total Construction Cost Estimate</b>					<b>\$1,024,100</b>
<b>Right-of-Way Cost</b>		-	SF	\$3.00	\$0.00
<b>Engineering Services (10% of Construction Cost)</b>		10.0%			\$102,500.00
<b>Surveying Services (3% of Construction Cost)</b>		3.0%			\$30,800.00
<b>Geotechnical Services (1% of Construction Cost)</b>		1.0%			\$10,300.00
<b>Testing (1% of Construction Cost)</b>		1.0%			\$10,300.00
<b>*Total Capital Cost (Based on Unit Prices for May 2005)</b>					<b>\$1,178,000.00</b>
<b>*Total Capital Cost Per Foot</b>					<b>\$450.00</b>
<b>*Future Capital Cost (Based on 3% Inflation for 10 years)</b>					<b>\$1,579,000.00</b>

\*This estimate does not include Legal, Administration, or Financial Cost

# **Appendix E**

## **Roadway Improvements Plan Project CIP Service Units of Supply**



**Coppell Roadway Impact Fee - 2005**  
Roadway Improvements Plan Project  
CIP Service Units of Supply

Project	Roadway	From	To	Length (Feet)	Length (Mile)	Lanes	Type	Veh-Mi Capacity Pk-Hr Per lane	PM Peak-Hour Volume		% in Service Area	Veh-Mi Total Supply Peak-Hour	Veh-Mi Total Demand Peak-Hour	Excess Capacity Peak-Hour Veh-Mi	Total Project Cost	Total Project Cost w/ Financing
									Direction							
									A	B						
									Northbound Eastbound	Southbound Westbound						
RECOUPEMENT PROJECTS																
3*	SANDY LAKE ROAD	DENTON TAP ROAD	MACARTHUR BLVD.	10330	1.96	4	C4D	625	1,012	923	100%	4,891	3,786	1,105	\$11,145,337	\$14,935,000
4*	SANDY LAKE ROAD	MACARTHUR BLVD.	CITY LIMIT (EAST)	4920	0.93	4	C4D	625	672	857	100%	2,330	1,424	905	\$5,193,720	\$6,960,000
8*	FREEPORT PARKWAY	IH-635	BETHAL ROAD	6740	1.28	4	C4D	625	1,196	400	100%	3,191	2,037	1,154	\$1,017,629	\$1,364,000
12*	BELT LINE ROAD	SOUTHWESTERN BLVD.	MACARTHUR BLVD.	12090	2.29	6	P6D	700	1,236	574	50%	4,809	2,072	2,736	\$522,283	\$700,000
EXPANSION PROJECTS																
1**	SANDY LAKE ROAD	CITY LIMIT (WEST)	COPPELL ROAD	4980	0.94	4	C4D	625	353	374	100%	2,358	686	1,672	\$5,802,578	\$7,776,000
2**	SANDY LAKE ROAD	COPPELL ROAD	DENTON TAP ROAD	5870	1.11	4	C4D	625	836	587	100%	2,779	1,582	1,197	\$5,115,927	\$6,856,000
5**	ROYAL LANE	SANDY LAKE ROAD	EXTEND SOUTH	1380	0.26	4	C4D	625	441	397	100%	653	219	434	\$771,750	\$1,035,000
6**	FREEPORT PKWY	SH 121	SANDY LAKE ROAD	3170	0.60	6	P6D	700	0	0	100%	2,522	0	2,522	\$1,140,436	\$1,529,000
7**	FREEPORT PKWY	RUBY ROAD	SANDY LAKE ROAD	3940	0.75	4	C4D	625	340	151	100%	1,866	366	1,499	\$1,627,609	\$2,181,000
9**	BETHEL ROAD	CITY LIMIT (WEST)	FREEPORT PKWY.	6430	1.22	4	C4D	625	371	326	100%	3,045	849	2,196	\$8,994,000	\$12,052,000
10***	ROYAL LANE	IH-635	BETHEL ROAD	2990	0.57	6	P6D	700	614	557	100%	2,378	663	1,715	\$3,394,000	\$4,548,000
11***	SOUTHWESTERN BLVD	COPPELL ROAD	CREEK CROSSING	1500	0.26	4	C4U	440	242	197	100%	500	125	375	\$1,009,000	\$1,353,000
13***	MACARTHUR BLVD.	BETHAL SCHOOL ROAD	BELT LINE ROAD	2630	0.50	6	P6D	700	1,588	740	100%	2,092	1,160	932	\$1,579,000	\$2,116,000
	Subtotal				12.68							33,413	14,969	18,444	\$47,313,269	\$63,405,000

Roadway Facility	Type Designation	Hourly Vehicle-Mile Capacity per Lane Mile of Roadway Facility for LOS "C/D"
Principal Arterial - Divided	P6D	700
Divided Local Arterials	C4D	625
Undivided Collectors - 4 lane	C4U	440
Undivided Collectors - 2 Lane	C2U	350

## **Appendix F**

### **Land Use Vehicle-Mile Equivalency Table**

**CITY OF COPPELL**  
**AVERAGE LAND USE TRIP CALCULATIONS**

LAND USE	ITE Land Use <sup>1</sup>	ITE Land Use Code	Development Unit	Trip Generation Rate <sup>2</sup>	No. of Studies	Pass By Rate <sup>3</sup>	Average Trip Rate	Average Land Use Trip Rate with deductions	NCTCOG <sup>4</sup> Trip Length	1/2 Trip Length	Average Trip Length <sup>5</sup>	Total Service Units (Veh-Mi/Dev Unit) <sup>6</sup>
Commercial / Office / Retail	General Office	710	1000 sq. ft.	1.49	235	0			9.60	4.80		
	Medical-Dental Office	720	1000 sq. ft.	3.72	41	0			9.60	4.80		
	Electronic Superstore	863	1000 sq. ft.	4.5	3	0.4			3.90	1.95		
	Pharmacy with drive thru	881	1000 sq. ft.	8.62	12	0.49			1.50	0.75		
	Toy Superstore	884	1000 sq. ft.	4.99	2	0.34			4.30	2.15		
	Specialty Retail Center	814	1000 sq. ft.	2.71	5	0.34			3.10	1.55		
	Free standing Discount Superstore	813	1000 sq. ft.	3.87	10	0.172			3.80	1.90		
	Apparel Store	870	1000 sq. ft.	3.83	7	0.34			3.10	1.55		
	Restaurant	932	1000 sq. ft.	10.92	6	0.44			3.80	1.90		
	Shopping Center	820	1000 sq. ft.	3.75	407	0.34			6.40	3.20		
	Super market	850	1000 sq. ft.	10.45	42	0.36			2.10	1.05		
	Fast food with drive thru	934	1000 sq. ft.	34.64	110	0.5			4.30	2.15		
	Automotive Care Center	942	1000 sq. ft.	3.38	5	0.3			4.50	2.25		
	Home Improvement Superstore	862	1000 sq. ft.	2.45	11	0.48			3.90	1.95		
	Auto Parts Sales	843	1000 sq. ft.	5.98	5	0.43			2.30	1.15		
	Garden Center	817	1000 sq. ft.	3.8	12	0.4			3.10	1.55		
	Arts and Crafts Store	879	1000 sq. ft.	6.21	2	0.34			2.30	1.15		
	Gasoline/Service Station with Conv	945	1000 sq. ft.	96.37	31	0.56			1.80	0.90		
	Furniture Store	890	1000 sq. ft.	0.46	16	0.53			4.80	2.40		
	Discount Club	861	1000 sq. ft.	4.24	25	0.34	3.70	2.55	2.30	1.15	2.01	5.14
Light Industrial	General Light Industrial	110	1000 sq. ft.	0.99	26	0			6.60	3.30		
	Industrial Park	130	1000 sq. ft.	0.86	42	0			6.60	3.30		
	Manufacturing	140	1000 sq. ft.	0.74	54	0			6.60	3.30		
	Mini Warehouse (Self Storage)	151	1000 sq. ft.	0.26	13	0			6.60	3.30		
	Utilities	170	1000 sq. ft.	0.76	3	0	0.72	0.72	6.60	3.30	3.30	2.38
Public Institutional	Middle/Jr high school	522	1000 sq. ft.	1.19	9	0			4.20	2.10		
	High School	530	1000 sq. ft.	0.97	22	0			4.20	2.10		
	Jr. / Community College	540	1000 sq. ft.	2.54	3	0			6.00	3.00		
	Church	560	1000 sq. ft.	0.66	11	0	1.34	1.34	2.90	1.45	2.16	2.90
Residential - High Density	Apartment	220	DU	0.62	90	0	0.62	0.62	8.40	4.20	4.20	2.60
Residential - Medium/Low Density	Single-family detached housing	210	DU	1.01	302	0	1.01	1.01	8.40	4.20	4.20	4.24
Parks and Open Space	Golf Course	430	acres	0.3	5	0			4.70	2.35		
	City Park	411	acres	0.16	3	0	0.23	0.23	4.70	2.35	2.35	0.54

**Notes:**

<sup>1</sup> Source ITE Trip Generation Manual 7th Edition

<sup>2</sup> Average number of PM peak hour trips per development unit

<sup>3</sup> Source Trip Generation Handbook

<sup>4</sup> Source NCTCOG 1984 & 1994 Workplace Survey and 2001 National Household Travel Survey

<sup>5</sup> Minimum average value of 1/2 trip length or 6 miles

<sup>6</sup> Calculated by multiplying the average trip length by the average trip rate w/ deductions

# **Appendix G**

## **Resolution for Impact Fees**

## A RESOLUTION OF THE CITY OF COPPELL, TEXAS

RESOLUTION NO. 2005-1011.1

A RESOLUTION OF THE CITY OF COPPELL, TEXAS, AMENDING RESOLUTION NO. 010996.3, THE MASTER FEE SCHEDULE, AS AMENDED, BY AMENDING THE GENERAL FEES-LIBRARY, IN PART; THE GENERAL FEES-ENGINEERING, IN PART; AND THE IMPACT FEES, IN PART; AND PROVIDING A REPEALING CLAUSE AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, the City Council of the City of Coppel, Texas, previously adopted Resolution No. 010996.3 to provide for general and special fees and charges to be assessed and collected by the City, as authorized by the Code of Ordinances and other applicable codes, ordinances, resolutions, and laws; and

WHEREAS, the City Council of the City of Coppel desires to amend certain fees as set forth therein and delete others as authorized by law;

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF COPPELL, TEXAS:

SECTION 1. That the Master Fee Schedule section entitled "General Fees" be amended, in part, to read as follows:

".....

## Library Fees

.....

Computer Diskettes - CD	\$ .50
Computer Diskettes - CD-RW	2.00

.....

## Engineering Fees

## 8) Copy Fees

.....

g. Standard Construction Details 11x17"	\$25.00
Standard Construction Details-CD	10.00

.....

j. Xerographic Copy/24"x36" or larger	5.00
---------------------------------------	------

....."

**MAXIMUM FEE RATE FOR IMPACT FEES  
SCHEDULE 1**

<b>WATER FACILITY MAXIMUM FEE PER SERVICE UNIT *</b>		
<b>Meter Size</b>	<b>E.S.U. **</b>	<b>Water Impact Fee</b>
5/8" x 3/4"	1.00	\$ 990.00
1"	1.67	\$ 1,653.30
1 1/2"	3.33	\$ 3,296.70
2"	5.33	\$ 5,276.70
3"	11.67	\$ 11,553.30
4"	21.00	\$ 20,790.00
6"	46.67	\$ 46,203.30
8"	80.00	\$ 79,200.00

<b>WASTEWATER FACILITY MAXIMUM FEE PER SERVICE UNIT *</b>		
<b>Meter Size</b>	<b>E.S.U. **</b>	<b>Water Impact Fee</b>
5/8" x 3/4"	1.00	\$ 933.00
1"	1.67	\$ 1,558.11
1 1/2"	3.33	\$ 3,106.89
2"	5.33	\$ 4,972.89
3"	11.67	\$ 10,888.11
4"	21.00	\$ 19,593.00
6"	46.67	\$ 43,543.11
8	80.00	\$ 74,640.00

<b>ROADWAY FACILITY MAXIMUM FEE PER SERVICE UNIT *</b>		
<b>Service Area</b>	<b>Cost Per Service Unit</b>	
1	\$	168.00

\* Includes 50% Credit

\*\* From AWWA Manual 6, Water Meters - Selection, Installation, Testing and Maintenance, 3<sup>rd</sup> edition, 1986

**PAYMENT AND COLLECTION FEE RATE  
SCHEDULE 2**

<b>WATER FACILITY PAYMENT AND COLLECTION FEE PER SERVICE UNIT</b>		
<b>Meter Size</b>	<b>E.S.U. *</b>	<b>Water Impact Fee</b>
5/8" x 3/4"	1.00	\$ 900.00
1"	1.67	\$ 1,503.00
1 1/2"	3.33	\$ 2,997.00
2"	5.33	\$ 4,797.00
3"	11.67	\$ 10,503.00
4"	21.00	\$ 18,900.00
6"	46.67	\$ 42,003.00
8"	80.00	\$ 72,000.00

<b>WASTEWATER FACILITY PAYMENT AND COLLECTION FEE PER SERVICE UNIT</b>		
<b>Meter Size</b>	<b>E.S.U. *</b>	<b>Water Impact Fee</b>
5/8" x 3/4"	1.00	\$ 900.00
1"	1.67	\$ 1,503.00
1 1/2"	3.33	\$ 2,997.00
2"	5.33	\$ 4,797.00
3"	11.67	\$ 10,503.00
4"	21.00	\$ 18,900.00
6"	46.67	\$ 42,003.00
8"	80.00	\$ 72,000.00

<b>ROADWAY FACILITY PAYMENT AND COLLECTION FEE PER SERVICE UNIT</b>		
<b>Service Area</b>	<b>Cost Per Service Unit</b>	
1	\$	150.00

\* From AWWA Manual 6, Water Meters - Selection, Installation, Testing and Maintenance, 3<sup>rd</sup> edition, 1986

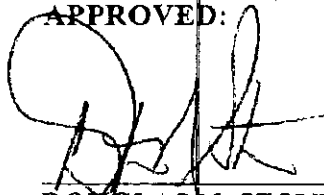
**SECTION 2.** That all provisions of the resolutions of the City of Coppell, Texas, in conflict with the provisions of this Resolution, except as noted herein, be, and the same are hereby, repealed, and all other provisions not in conflict with the provisions of this Resolution shall remain in full force and effect.

**SECTION 3.** That should any word, phrase, paragraph, or section of this Resolution be held to be unconstitutional, illegal or invalid, the same shall not affect the validity of this Resolution as a whole, or any part or provision thereof other than the part so decided to be unconstitutional, illegal or invalid, and shall not affect the validity of the Resolution as a whole.

**SECTION 4.** That this Resolution shall become effective immediately from and after its passage as the law and charter in such cases provide.

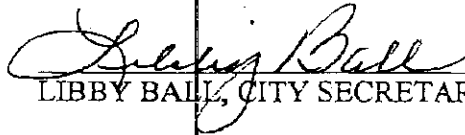
**DULY PASSED** by the City Council of the City of Coppell, Texas, this the 11<sup>th</sup> day of October, 2005.

**APPROVED:**



DOUGLAS N. STOVER, MAYOR

**ATTEST:**



LIBBY BALL, CITY SECRETARY

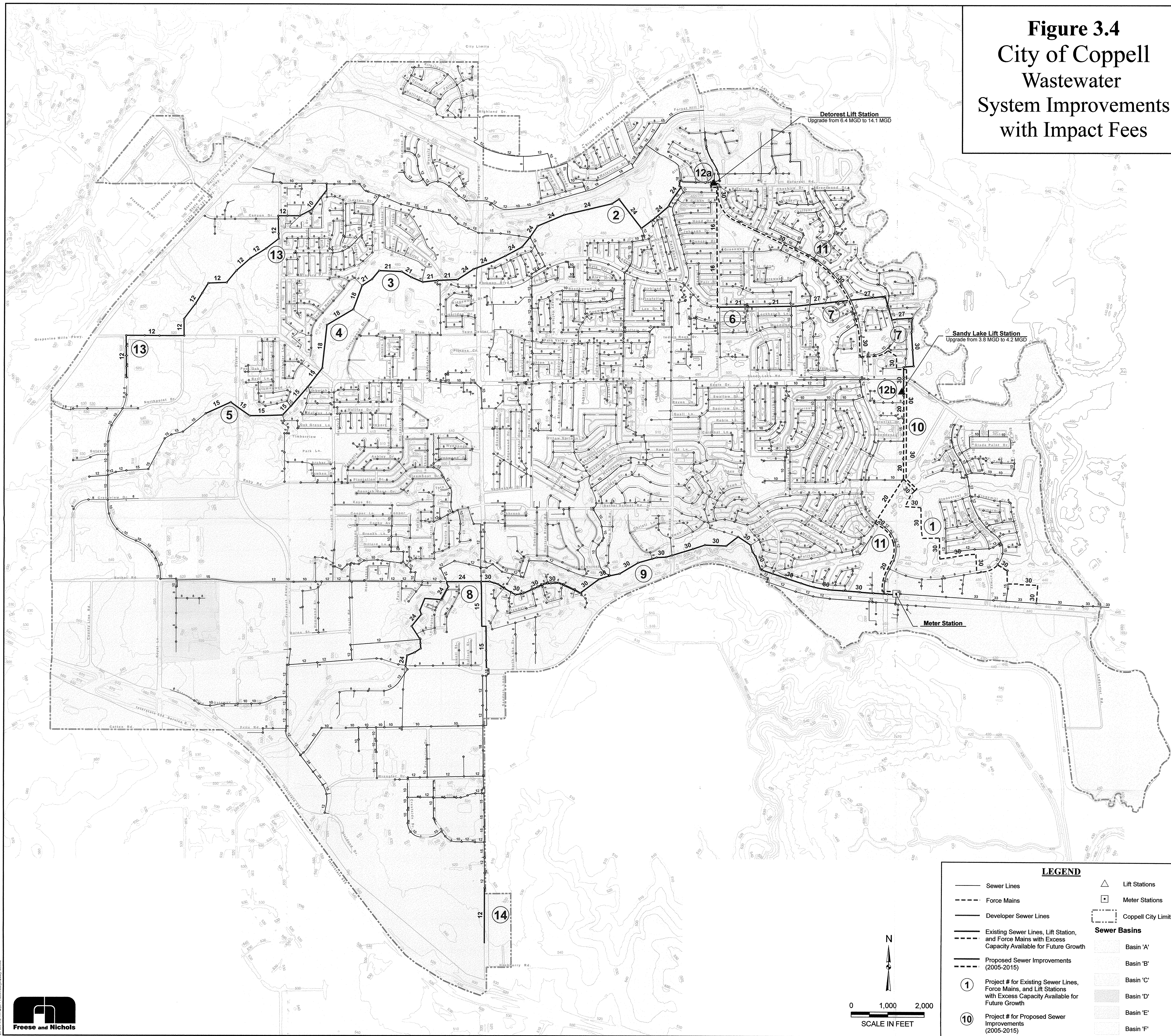
**APPROVED AS TO FORM:**



ROBERT E. HAGER, CITY ATTORNEY

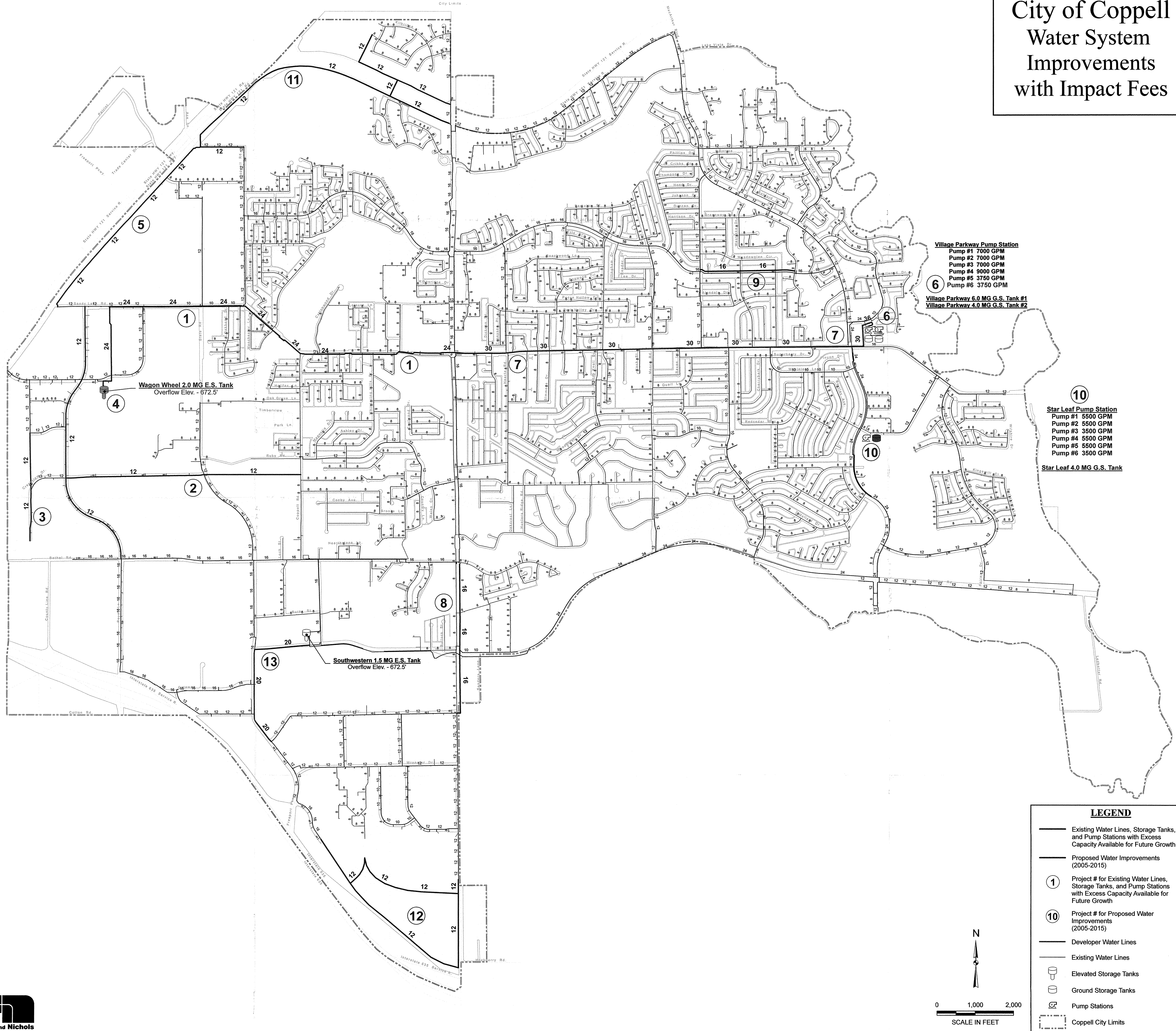


**Figure 3.4**  
**City of Coppell**  
**Wastewater**  
**System Improvements**  
**with Impact Fees**





**Figure 3.3**  
**City of Coppell**  
**Water System**  
**Improvements**  
**with Impact Fees**



**LEGEND**

- Existing Water Lines, Storage Tanks, and Pump Stations with Excess Capacity Available for Future Growth
- Proposed Water Improvements (2005-2015)
- Project # for Existing Water Lines, Storage Tanks, and Pump Stations with Excess Capacity Available for Future Growth
- Project # for Proposed Water Improvements (2005-2015)
- Developer Water Lines
- Existing Water Lines
- Elevated Storage Tanks
- Ground Storage Tanks
- Pump Stations
- Coppell City Limits

